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THE ENDOCRINES IN GYNECOLOGY

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This paper is to present in simple language the latest facts concerning the relation of the anterior pituitary body to ovarian functions, and to deduct from this information methods of treatment based thereon. In my experience, though occasional disappointment has been experienced, the methods of treatment are productive of worthwhile results.

Physicians have long realized that in order to interpret the cause of many gynecological disturbances it has been necessary to look beyond the pelvis. Research within the last few years has further justified the worthiness of this line of thought. I refer to the relation of the anterior lobe of the pituitary body to sex development and function.

In order to clarify my discussion of the subject, I wish to call attention to a few anatomical and physiological points concerning the pituitary body and ovaries.

The pituitary body is a small ellipsoid organ located in the sella tursica, at the base of the brain. It consists of two principal lobes, the anterior and the posterior, with a thin epithelial structure intervening, known as the pars intermedia. In order to comprehend the physiology of the pituitary body it is necessary to study each lobe as a separate and distinct organ.

Only the anterior lobe will be considered here. This lobe is an epithelial structure embryologically derived from tissue in common with the pharynx.

Two types of epihtelial cells in the anterior lobe are of interest: The eosinophilic or growth cells, and the basophilic or sex cells. The cells which elaborate the growth hormone are capable of playing peculiar pranks on the development of human beings. The human curiosities of the circus, such as the giant, the midget, and the lion-jawed man, are the results of over or under secretion of the growth hormone.

The basophilic or sex cells produce a hormone in the female. known as prolan. This hormone has a powerful influence over the development and function of the ovary. If the anterior lobe of the pituitary body is destroyed, ovarian function ceases. As the growth hormone causes a wide variation in the stature of man, so does the sex hormone cause a wide variation in sex development and function.

Let us now consider the ovary. It has been variously estimated that the human ovary at birth contains from 30,000 to 160,000 unripe graffian follicles with contained unripe ova. As puberty is approached, one by one, and in succession these follicles, with contained ova, ripen and approach the periphery of the ovary.

The liquid in this cyst like graffian follicle known as follicular liquid, is rich in the hormone, estrin. Estrin causes endometrial hyperplasia and uterine bleeding—menstruation. After the rupture of the graffian follicle estimated to occur 12 to 16 days before menstruation, a clot quickly organizes and forms a yellow body known as the corpus luteum. Corpora ultea contain estrin but secrete a more powerful hormone known as progestin. Progestin is both antagonistic and syneristic to estrin. This hormone stimulates the nidatory changes in the endometrium and at the same time defers menstruation until the endometrium is properly prepared for the implantation of the placenta.

Let us consider again prolan, the female anterior pituitary sex hormone. As sunlight stimulates the budding and flowering of plants, so does prolan stimulate follicular ripening and

rupture, and later menstruation. The process continues with the formation of a corpus luteum and cessation of menstruation. Prolan is thought by many to contain two hormones, prolan A and prolan B. Prolan A, according to this theory, is the follicular-stimulating hormone, whereas prolan B is the leutinizing hormone. These two, however, have never been isolated one from the other, except experimentally.

The urine of pregnancy contains a rich supply of a hormone very similar in many respects to prolan. Investigators differ in their opinion as to the source of this hormone. One school of thought claims that it is furnished by the anterior lobe of the pituitary body. The other considers that it is not from that source, but analagous in its biological effect on the sex apparatus to that of an extract from the anterior pituitary lobe. It has been shown, however, that pregnancy urine extract does not contain the growth hormone. The Aschheim-Zondek test for pregnancy is based on the presence of this hormone in the urine. Though prolan A and B have never been separated for therapeutic purposes, it has been found that small doses of the extract obtained from the urine of pregnancy. given intramuscularly, act on the ovary as the follicular stimulator, whereas large doses cause rapid leutinization.

Based on the theories mentioned here, methods of treating various conditions from the endocrine standpoint are suggested.

Amenorrhea: In treating amenorrhea it is first necessary to consider whether the ovary should be stimulated to form its own estrin or whether estrin should be supplied as in replacement therapy. In young patients it is probable that the best results will be obtained by using small doses of water-soluble extracts obtained from the urine of pregnancy, as an ovarian stimulant. In older patients, or in patients who have been treated with x-rays or radium, the ovary may not possess enough vitality to respond to stimulation from prolan. In the latter cases an estrin-containing extract should be used as replacement therapy.

Menorrhagia: In cases of excessive or prolonged menstruation of young subjects, good results may often be obtained by using larger doses of the extract from pregnancy urine. This hastens the formation of corpa lutea which contain, as has been stated, progestin. Corpus luteum extract may also be given in conjunction, in order to hasten the effect in cases in which menstruation occurs too often as, for instance, at 21 day intervals. The interval may be extended to its normal time by giving adequate doses of corpus luteum extract hypodermically, beginning about 10 days before the expected time of menstruation. I give two ampuls of a standard product on alternate days, and continue until menstruation is established on a normal basis.

Hot Flashes: It has been my observation that the hot and cold flashes of women with associated nervousness, are usually due to a waning in the production of corpora lutea. My experience in this respect, however, does not coincide with many other clinicians who claim equally satisfactory results with estrin bearing preparations such as theelin. It has been observed that in menopause cases where estrin is not demonstrable in the urine that estrin is probably the best preparation to use in these cases. My observation, however, has been that corpus luteum has a soothing effect to the nervous system and it is my practice where estrin does not give relief to resort to extract of corpus luteum.

Dysmenorrhea: In purely functional types of dysmenorrhea, some estrin-containing preperation given hypodermically, and in some instances by mouth, beginning well in advance of the time of menstruation, has given the best results. One theory of this method of procedure is that estrin improves the uterine blood supply.

Sterility: It has been shown that ovulation does not occur in many sterile women who menstruate regularly. In this instance anterior pituitary extract, pregnancy urine extract, and corpus luteum extract are indicated.

It will be recalled that the progestin content of corpus luteum is necessary to bring about the so-called nidatory change in the endometrium, preparatory to implantation of the placenta.

Abortions: Habitual abortions not due to organic diseases may sometimes be prevented by the liberal hypodermic use of corpus luteum extract.

It will be seen that of the preparations recommended in the above functional menstrual disturbances listed, only three hormones are recognized as of therapeutic value, in the last

analysis. These are prolan, estrin, and progestin. I have attempted to classify the various endocrine products, all of which may be grouped under the three hormones as follows:

Prolan—extract anterior lobe of pituitary body, antuitrin S, follutein, and antophysin; setrin—ovarian residue, whole ovary, agomensin, sistomensin+progestin, theelol, theelin, progynon, amniotin, menformon and estrogen, etc.; and progestin—corpus luteum, lutein, sistomensin+estrin, luteo-hormon and proluton-B.

FUNDAMENTAL PRINCIPLES IN THE GRADING OF MALIGNANCY OF TUMORS

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(Read before the Pathology Section of the California Medical Association at the sixty-fourth annual session, Yosemite National Park, May 13-16, 1935.)

In discussing the changing concepts of malignancy and in demonstrating the grading of malignancy of tumors, I will review the work of others and later publish a further[21] statistical report of our own cases. The knowledge of tumors has accumulated over many years and is constantly being modified; contributions of many pathologists have lead to adequate diagnosis of tumors.

Generations ago the clinicians knew of the variations in the malignancy of tumors, but malignancy was entirely a clinical concept and crudely defined; any tumor that endangered life or caused death was considered malignant. Malignancy was dependent chiefly on the size and the location of the tumor. Such clinical usage of the term "malignancy" leads to difficulties and errors. Tumors are benign or malignant regardless of the nature of their cell elements; all tumors at an early stage are benign; a tumor is more malignant in the advanced stages than in the early. Even today, the classification and treatment of cancer without regard to histo-pathology are misleading and regretfully unsatisfactory.

By the aid of microscopic studies, the pathologic anatomists classified tumors as benign and malignant, basing their classification on clinical, anatomical, and histological data. To them malignancy of tumors was dependent upon rapid growth, infiltration, and metastases. These principles are well known and generally accepted but do not go far enough. However, tumors were sometimes diagnosed pathologically as benign until they had produced metastases or death of the patient. A glandular tumor was an adenoma until its cells had broken the so-called basement membrane or formed metastases; then it was called a "malignant adenoma." Now we know that the cells are malignant before they break through the basement membrane and we make a diagnosis of adenocarcinoma before infiltration occurs. There is no such thing as "benign metastasizing adenoma."

Pathologists have long realized that the difference in the malignancy of tumors is, to some extent, reflected in the histological picture. High and low malignancy were sometimes recognized pathologically but not with regularity and too frequently not until the end stages of the disease—too late to be of value to the patient.

The clinical and anatomical concepts of malignancy are modified, and frequently nullified, by the histologic criteria. Virchow recognized the cell as the histologic unit in the study of disease, and emphasized cellular pathology which is of greatest significance in neoplasia. It was recently reiterated that the cancer cell itself has been too little studied[*]. The determination of malignancy, degree of malignancy, and, in fact, the actual diagnosis of tumors must be based on the morphologic characteristics of the tumor cells. In a sense, the malignancy of cells corresponds to the virulence of bacteria, but with the advantage that it can be estimated by microscopical examination. Malignancy is a property or quality of neoplastic cells and is manifested by certain abnormalities in the structure of the cells and their nuclei; it is usually, if not always, synonymous with anaplasia.

Hansemann introduced "anaplasia" not with the idea that all factors producing anaplasia were understood, but as a starting point in the histopathological study of tumors. Anaplasia is a histogenetic theory and does not concern etiology (12).

It has long been stoutly maintained that, morphologically, there is no such thing as a malignant or cancer cell but merely a change in the physiologic activity of the cell. Hansemann[10] searched for a histologic specificum for cancer, observed the lack or loss of differentiation in the malignant cells, and regarded the cancerous process as a second form of metaplasia which he called "anaplasia." Differentiation refers to the series of structural changes which occur in a cell from its earliest stages to maturity.

With the loss of differentiation and specialization of the cell, the function is decreased and the reproductive and proliferative activity is increased[4]. Undifferentiated and partially differentiated cells are always present in malignant tumors. Cancer cells with little differentiation show much anaplasia and those with much differentiation little anaplasia; in other words, differentiation of the cells and anaplasia are inversely proportional. Hansemann[10,11] recognized degrees and grades of anaplasia, and stated that the grade of anaplasia in the tumor and in the metastases does not change except in rare cases.

Hansemann showed that through a process of dedifferentiation, or what he termed "anaplasia (backward formation, epithelial cells could undergo malignant transformation"[9]. Questions are raised whether the cells which may become differentiated or anaplastic are physiologically and morphologically normal cells (mature or immature), or are already abnormal cells. Cells of benign tumors are usually considered fully differentiated but are neoplastic cells and not normal tissue cells. It is well established that carcinoma may arise in an adenoma of long standing. On the basis of dedifferentiation Broders[4] explains the adenocarcinoma originating in an adenoma.

Whether or not mature normal cells may revert to the immature stages or become dedifferentiated is still an open question[10]. Ewing[7] believed this idea of dedifferentiation to be an unwarranted assumption contrary to sound biological principles, and that anaplasia is a term more applicable to the physiological state and the histological appearance of malignant cells.

If normal cells merely lost their differentiation in an orderly backward formation, in the exact reverse order in which differentiation was acquired, it is conceivable that they would be immature normal cells and not anaplastic or malignant cells. It appears biologically sound to conclude that mature normal cells do not revert to the normal immature stages except by the normal processes of cell division, usually by mitosis; but the possibility still remains that normal cells may become dedifferentiated into abnormal immature stages, resulting in the anaplasia of malignant cells.

Hansemann's anaplasia characterizes the appearance of malignant cells and implies more than a loss of normal differentiation; there is also included a dysplasia in the intracellular structures which exhibits itself by the profound disturbances in the chromatin and the irregular and disorderly growth of the cells. This phase of anaplasia is the basis of the distinction between malignant and normal cells whether of the embryonic or the adult tissue type.

MacCarty[12,13,14,15,16,17] has frequently illustrated the structural differences between the malignant cell and the reparative regeneration cell. He believed that the malignant cell is evolved from a reserve cell although it may be derived directly from a cell which is normally regenerated[16].

Anaplasia is not a reversion to the primitive or embryonic cell type. The indiscriminate use of the term "embryonic" for any and all young, immature, or undifferentiated cells has caused much confusion in oncology. Embryonic cells, like adult cell types, may be normal or neoplastic. Embryonic cells occur normally in the embryo; they may lack differentiation and be neither neoplastic nor malignant; the cells exhibit no anaplasia—no dysplasia. Neoplasms definitely of the embryonic cell type constitute a comparatively small group. Wilm's tumor (adenomyosarcoma) of the kidney is an outstanding example of the embryonal tumors. Although there are true neoplasms of the embryonic cell type, the importance of embryology in neoplastic diseases has been over-emphasized[4].

The significance of asymmetrical mitosis is still undetermined. Asymmetrical mitosis refers to atypical, irregular, and multipolar mitosis in a cell having a single nucleus and is different from multiple mitosis which is synchronous mitosis in a multinucleated cell. Ir-

regular and multipolar mitosis has been reported as an artefact, as a rare incidental finding in inflammation and repair, and as an indication of a pathologic process. In the evolution of the concept of anaplasia, dedifferentiation, Hansemann[11, 12] believed that each asymmetrical division of a cell is a change in its differentiation and is accompanied by a change in growth-energy and growth-direction, and that asymmetrical mitosis is a characteristic of cancer. "The more the mitoses of the cancer differ from those of the mother-tissue, the greater is the anaplasia of the tumor"[11]. Broders[5] finds that atypical, irregular, and multipolar mitoses are usually associated with carcinoma and other neoplasms of high degree of malignancy, and believes that it is safe to infer that these forms represent a state of extreme undifferentiation.

Mallory's[20] emphasis on cytology may be briefly summarized as follows: To understand tumor cells, it is necessary to know as much as possible of the development and differentiation of normal cells. The gradation from normal cells to tumor cells should be based on cell differentiation. The true tumor cells tend to differentiate in exactly the same way as do the normal cells to which they correspond. In slowly-growing tumors the differentiation may be perfect. In general, the more the cells differ from the normal in structure and arrangement, the more likely is the tumor composed of them to be malignant. In rapidly-growing tumors the differentiation of the cells is less marked; the cells may depart so widely from the model that it cannot be recognized. Nuclei often show much variation in size; tumor cells frequently exhibit marked differences both in size and in shape. The study and recognition of the differentiation of tumor cells are exceedingly important, for on the differentiation depends the exact diagnosis of the various kinds of tumors.

Although Virchow spoke of the degrees of malignancy and Hansemann mentioned even the "grades of anaplasia," the actual histological grading of the malignancy of tumors was introduced by Broders[1] in 1920. In his classical studies of tumors, Broders[1,2,3,4] amplified and applied Hansemann's theory of anaplasia and incorporated the grade of malignancy directly into the pathological diagnosis.

In 1915, Broders began the grading of malignant tumors and by 1925 had reported the grade and the clinical result of about 2,000 epitheliomas from various parts of the body. His method of grading is based on the degree of differentiation, on the number of undifferentiated and differentiated cells composing the tumor. Tumors are graded on a basis of I to IV, grade IV being the most malignant. Grade I has from one to 25 per cent, II from 25 to 50, III 50 to 75 and IV has 75 to 100 per cent of undifferentiated cells.

The diagnosis and grading of the tumor are made independently of the patient's history and clinical record. The exact source of the tissue should be known. The cell type of the tumor is determined before grading the malignancy. Actual counts of the number of undifferentiated and differentiated cells are rarely made in practice, but it is necessary to study various fields in the slides with both low and high power lenses.

For example, in 537 epitheliomas of the lip, the total good results of surgical treatment checked up eight years after the operations were as follows[1]: 95 per cent in I, 62 in II, 21 in III and none in IV. Thus it has been established that the degree of malignancy of a tumor is inversely proportional to the degree of differentiation of its cells—i.e., directly proportional to the degree of anaplasia. The literature now contains many reports of large series of cancers which have been graded histologically and checked with the clinical results, abundantly confirming Broders' work.

Anaplastic or undifferentiated cells are characterized by irregular and multipolar mitosis, and hyperchromatism and variations in the size and the shape of the cells and their nuclei. "Cells in mitosis and those with single, large deeply-staining nucleoli ("one-eyed cells") are undifferentiated; their number play an important part in the grading."[1]

Normal differentiation of stratified squamous epithelium of the skin is from cuboidal basal cells, through polyhedral prickle cells, and squamous cells, to keratinized cells (Hansemann, 1893). A completely differentiated cell of a squamous cell epithelioma is one in which the entire cytoplasm is keratinohyalinized, or keratinized, and the nucleoplasm has become eccentric and degenerated. A partially differentiated cell is one in which the cytoplasm is not completely keratinized but is

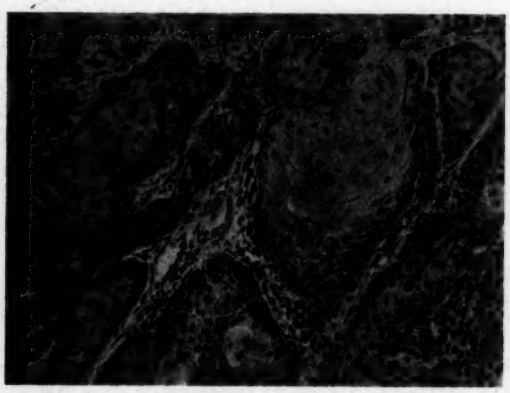
usually disproportionately large in volume in comparison with the nucleoplasm, which often appears decreased, is small, spheroidal or oval, in center of the cytoplasm, and shows no evidence of degeneration[4].

Malignant cells are usually larger than normal. The nucleus is large absolutely and in proportion to the amount of cytoplasm. The chromatin in the nucleus tends to be coarse, irregular, and granular. Nucleoli, when present, are larger than normal and often multi-

or pleo-morphism. The polarity, the orderly normal arrangement, of the cells is nearly or entirely lost in the highly malignant tumors and much less disturbed in those of low malignancy.

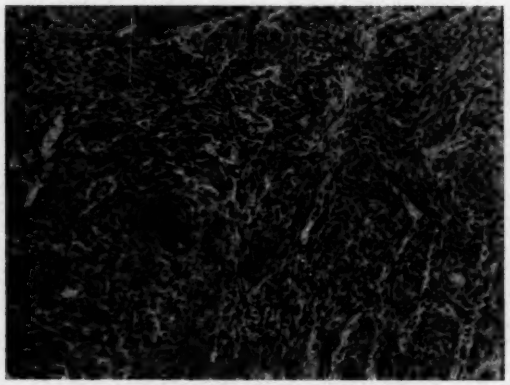
The criteria for grading of malignancy necessarily vary somewhat with the character of the normal cells from which the tumor is derived. "In grading of epitheliomas one must always take into consideration the normal epithelium of the organ from which the epitheli-

SQUAMOUS CELL EPITHELIOMA



GRADE I

GRADE II



GRADE III

GRADE IV

ple; they are particularly well demonstrated in fresh tissue sections stained with polychrome methylene blue.

Irregular and multipolar mitoses may be found; they may be X- or Y-shaped; pyknosis and karyorrhexis due to degeneration should not be mistaken for irregular mitoses. Sections of highly malignant tumors may show great variations in the size and shape of the cells and their nuclei, a condition now known as poly-

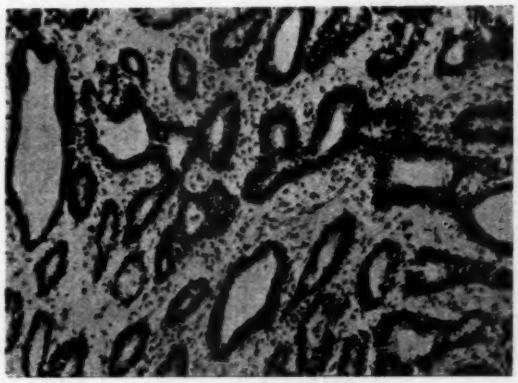
oma has arisen. The epithelium of the bladder, for instance, lacks a well-defined keratinized or horny layer"[3]. The basis for grading of malignancy tends to become clearer with the studies of normal and pathologic cells. The difficulties sometimes encountered in applying any system of grading is partly due to our incomplete knowledge of the varied morphologic characteristics which cells may possess in passing through the various phases of normal

or abnormal development. Cellular pathology has advanced sufficiently to warrant, at least, the grading of the malignancy of the common epithelial tumors.

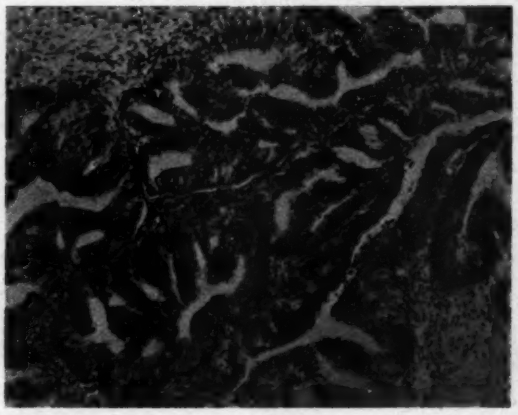
It is generally known that papillary, polypoid, or elevated cancers are less malignant than the flat, infiltrating, cauliflower or fungoid type of growth. This is a good general rule but is not to be absolutely trusted. "A neoplasm may be papillary and of low grade of malignancy, or papillary and of high grade; it may be flat or ulcerated and of low grade, or flat and ulcerated and of high grade"[1]. Some of the flat ulcerating epitheliomas of the lower lip are of low malignancy. Some of the cauliflower growth on the cervix are epitheliomas of high malignancy.

Furthermore, S. C. epitheliomas that are microscopically of the papillary type do not necessarily give rise to the cauliflower or exuberant type of tumor masses above the surface, but may be of high malignancy, infiltrate, and metastasize. In adenocarcinoma the formation of acini is a sign of differentiation of the tumor cells and an approach towards the normal histology. Intra-acinar papillary formations are most frequently seen in the low grade adenocarcinoma. Papillary formations in squamous cell epithelioma do not appear to have the same significance; papillary formations are not a prerequisite to function of the protective epithelial cells, but may be a mode of rapid growth. It is evident that in the diagnosis of neoplasms the cytological differentiation is of first importance, and the histological differentiation is secondary.

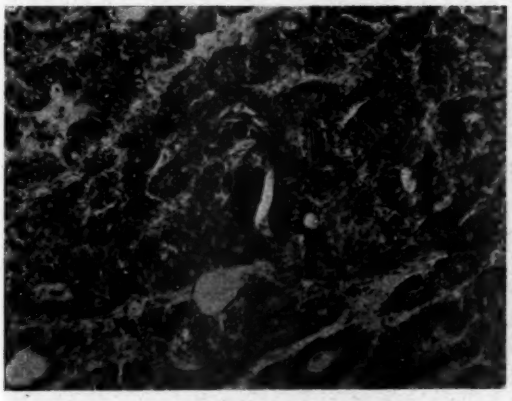
ADENOCARCINOMA- -RECTUM



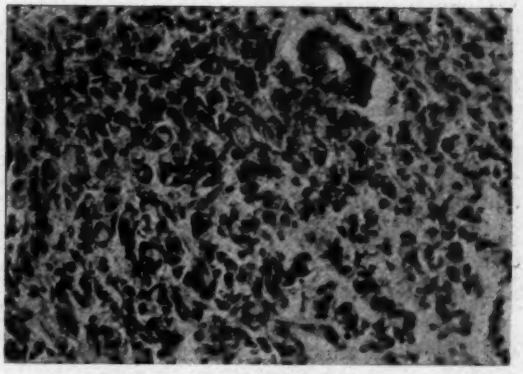
GRADE I



GRADE II



GRADE III



GRADE IV

Most of the principles already given also apply in the grading of adenocarcinoma. The formation of ducts and acini is the rule in grades I and II, is much less marked in grade

III, and is often entirely absent in grave IV. In the higher grades of malignancy the glandular tumor cells frequently occur in solid masses without histological differentiation and accompanying function. As could be expected, the cells in the tumors of low malignancy may perform some of their glandular functions, for example, the secretion of mucus. Many reports on the grading of adenocarcinoma have appeared in the literature[6, 9, 13, 14, 22, 23, 24].

By the grading of tumors, we now know pathologically that tumors of the same cell type may differ widely in the degree of malignancy in the same and in different locations[1, 2, 3, 4]. A grade I epithelioma rarely metastasizes, and then usually in the very advanced stages only; it runs a course over many years. A grade IV epithelioma practically always metastasizes in the early stages of the disease and tends to run a rapid fatal course. Epitheliomas of the lower malignancy, grade I and II, occur predominantly in the skin, lip, inner cheek, gums, anterior part of tongue, floor and roof of mouth, larynx, penis and labia. Epitheliomas of the higher malignancy, grade III and IV, occur predominantly in the tonsil, base of tongue, naso-pharynx, pharynx, esophagus, cervix uteri, and vagina. The lower malignancies of adenocarcinoma, grade I and II, predominate in the corpus uteri, colon, and rectum; while the higher malignancies, grade III and IV, predominate in the breast, stomach, and testicle. In some organs carcinoma of low and high malignancy occur in approximately equal frequency. Although the majority of the tumors are of the grades of malignancy indicated above, all tumors must be examined and graded microscopically.

It is evident that a pathological diagnosis simply of "carcinoma" is insufficient to indicate the real nature of the disease. The grading of malignant tumors has not appealed so strongly to the pathologic anatomists because death of the patient has already occurred, but in clinical or surgical pathology grading is a necessity. Long elaborate histological descriptions are seldom read by the clinician; they are for the pathologist; they are more appropriate in pathological research and in the body of necropsy reports.

It should be clear that the histological grading of malignancy of tumors by the pathologists is entirely different from the clinical grouping of tumors according to the clinical stages of the advancement of the disease, and is also different from clinical radio-sensitivity which refers to the rapidity of response, primary regression, obtained in the treatment of tumors by x-rays or radium.

The grading of malignancy of tumors is an aid in diagnosis, treatment, and prognosis. The required study of the neoplastic cells facilitates the determination of the cell type, and the distinction between benign neoplasms and tumors of low malignancy. The grading of malignancy of the tumor may decide whether the patient should be treated by irradiation, or by surgery, or by a combination of these two methods and how intensive and extensive the treatment should be. The pathological grading of tumors is an aid to the clinicians who take the trouble to become familiar with it. Many surgeons now do not operate radically for "cure" on tumors of grade IV malignancy.

In the formation of a prognosis one must consider the degree of malignancy, the cell type, the size, duration, and location of the tumor, the extent of the disease, and the general condition of the patient. "In the prognosis of malignant tumors the grade of malignancy is, by far, the most important factor. As a rule, the grades of malignancy of cancer are in direct proportion to their proliferative, infiltrative, metastasizing, and death-dealing capacities"[5].

Statistics[25] attempting to properly evaluate the therapeutic results are of little significance if the grade of malignancy and the extent of the disease are omitted, because in tumors of low malignancy the number of "cures" and length of palliation are relatively high.

The cytological diagnosis of tumors and the grading of malignancy become more important as we see the patients in the early stages of cancer. Although cancers are often diagnosed clinically, the surgeon and the radiologist realize that the clinical diagnosis of tumors is inadequate and has only presumptive value. The necessity of microscopical examination places the pathologist in the key position in diagnosis of cancer, for it is an accepted principle that treatment depends on the diagnosis. When the full significance of the cellular pathology of

tumors and grading of malignancy are recognized and seriously considered by the surgeons, radiologists, and pathologists who deal largely with neoplastic diseases, then better results may be expected from intelligent efforts.

If you believe with Stewart" that "every pathologist dealing with tumors has mentally or by elaborate description divided tumors into various grades of malignancy," there should be little difficulty now in incorporating the grade of malignancy in the diagnosis and in recording it on the pathological report. The simplest method is to name the tumor by its cell type and to indicate the grade of malignancy by numbers, following Broders' system.

RESUMÉ

1. With a few exceptions, the grade of malignancy of a cancer is the same throughout the whole tumor, the course of the disease, and the metastases produced.

2. Anaplasia is a histogenetic theory and does not concern etiology. It is applicable to the physiologic state and the histological appearance of malignant cells. Anaplasia implies a loss of normal differentiation and a dysplasia in the intracellular structures.

3. Malignancy is a property or quality of neoplastic cells and is manifested by certain abnormalities in the structure of the cells and their nuclei.

4. The degree of malignancy of tumors is directly proportional to the degree of anaplasia, or dedifferentiation, of the cells.

5. Recognition of the cell type and the degree of malignancy are the most important items in the microscopical diagnosis of tumors.

6. The indiscriminate use of the term "embryonic cells" for any and all young, immature, or undifferentiated cells, normal or neoplastic, benign or malignant, is unwarranted and should be discontinued.

7. The importance of embryology in neoplastic diseases has been greatly over-emphasized.

8. Tumors are not more malignant in the advanced stages than in the early stages of the disease.

9. The recognition of malignancy, and degree of malignancy must be made by microscopical examination and are based on cellular pathology.

10. Clinical diagnosis of tumors is inadequate and has only presumptive value. The necessity of microscopical examination places the pathologist in the key position in the diagnosis of cancer.

11. Without the pathological diagnosis and the grading of the malignancy of tumors, it is impossible to direct the treatment most intelligently and to evaluate the therapeutic results.

12. The grading of malignancy of tumors is an aid in the diagnosis, treatment, and prognosis of cancer. It is an aid to the clinicians who take the trouble to become familiar with it.

13. "As a rule, the grades of malignancy of cancer are in direct proportion to their proliferative, infiltrative, metastasizing, and death-dealing capacities. In the prognosis the grade of the malignancy is, by far, the most important factor.'"

14. As Osler said "As our pathology is, so is our medicine."

BIBLIOGRAPHY

1. Broders, A. C.: J.A.M.A. 74:656, 1920.
2. Broders, A. C.: Ann. Surg. 73:141, 1921.
3. Broders, A. C.: Ann. Surg. 75:574, 1922.
4. Broders, A. C.: Arch. Surg. 8:43, 1925.
5. Broders, A. C.: Bulletin of Amer. Soc. Control Cancer, 14: Aug. 1932.
6. Ewing, James: Neoplastic Diseases, 1928.
7. Ewing, James: Rep. Intern. Conf. on Cancer, London, 1928, p. 6 (quoted by Phillips, 24).
8. Grace, Edwin J.: Long Island Med. Jour. 23:523, 1929.
9. Greenough, R. B.: J. Cancer Research, 60:453, 1925.
10. Hansemann, David von: Virchow's Arch. 119:314, 1890.
11. Hansemann, David von: Virchow's Arch. 129:436, 1892.
12. Hansemann, David von: Die Mikroskopische Diagnose der bosartigen Geschwulste, 26-28, 1902.
13. Harrington, S. W.: Surg. Gyn. and Obst. 56:438, 1933.
14. Karsner, H. T. and Clark, B.: Am. Jour. Cancer, 16:933, 1932.
15. MacCarty, Wm. C.: Ann. Surg. 75:61, 1922.
16. MacCarty, Wm. C.: Ann. Surg. 76:9, 1922.
17. MacCarty, Wm. C.: J.A.M.A. 81:519, 1923.
18. MacCarty, Wm. C.: Surg. Gyn. and Obst. 40:783, Dec. 1925.
19. MacCarty, Wm. C.: Surg. Gyn. and Obst. 54:317, 1932.
20. Mallory, F. B.: Pathological Histology, 261-272, 1914.
21. Meland, Orville N.: Calif. and West. Med. 41; 1934.
22. Ochsenhirt, N. C.: Surg. Gyn. and Obst. 44:32, July, 1928.
23. Pack, Geo. T.: Abstractor's note, Am. Jour. Cancer, 15:1746, 1931.
24. Phillips, Ralph: Lancet, 1:118, 1931.
25. Rankin, F. W., and Broders, A. C.: Surg. Gyn. and Obst. 44:660, 1928.
26. Roskin, G.: Virchow's Arch. 277:466, 1930.
27. Stewart, F. W.: Am. Jour. 15:258, 1923.
28. Stewart, F. W., and Spies, J. W.: Am. Jour. Path. 5:109, 1929.
29. Warren, Shields: Arch. Path. 12:783, 1931.

DISCUSSION

DR. SCHUYLER PULFORD, M. D., Sacramento, Cal.: To one who has interested himself in tissue pathology for the past 15 years and who has both hunted ducks and looked down the gun-barrel of the microscope at malignant cells with Dr. Broders, this paper of Dr. Lindberg's rings true.

Although we await with particular interest his Los Angeles group's statistical report of the clinical and pathologic facts on their own cases we should be grateful to the author for first emphasizing certain fundamental principles helpful both to surgeons and cytologic pathologists alike. For instance it is well to emphasize that normal mature, completely differentiated cells do not revert to normal immature cells but that immature, undifferentiated cells rather, as MacCarty has shown come from "reserve cells" lying ready for growth to replace injured or castoff adults cells, resulting in either repair or neoplasia.

The simple unqualified diagnosis of "cancer" or "not cancer" is no longer as Lindberg says the whole story — especial in tumor patients who come early these days—thanks to the wide spread public education on cancer.

How can the surgeon and radiologist be posted and with the patient be benefited by the pathologist's knowledge of tumors, if the pathologist does not incorporate in his report a "degree of response to radiation and malignancy," some discussion as to each particular usual response to radiation, as well as its usual potentiality for metastasis and its death dealing properties. Is not the degree of malignancy the "ace in the hole"—starting point—for such a discussion?

We still see misleading and incongruous reports of statistical clinical results of malignancy treatment when cytological as well as clinical grading of the malignancies into specific groups is not included.

Practically all pathologists think in terms of "degree of malignancy"—why are they reluctant sometimes to apply a number or grade so someone else can benefit by their knowledge?

Such work as Haagenson's on the grading of tumors of the breast emphasizes as has Lindberg, the necessity of visualizing the normal adult completely differentiated functioning cell types and systems of cells in each organ in figuring a grade of malignancy of a tumor in that organ. For example skin cells differentiate towards squamous epithelium and are easy to grade, while breast cells mature to form milk secreting, sweat or sebaceous glands or duct-lining epithelial cells. Breast tumors are harder to grade.

The opponents of "grading" of malignancies, strange to say, often base their arguments on the very principles that enables one to accurately "grade" a tumor. Grading is based on estimating a percentage of cellular differentiation. This degree of differentiation varies in different parts of the same tumor. So how, they ask, can you grade them? Why, it is that very variation and its percentage that gives the "grade," all variations appearing usually in each low power field or at least in three or four fields of the microscope.

As far as I am aware no radiologist has subjected malignant tumors to graded doses of x-ray or radium to measure their response and grade them accordingly. Doctors Soiland and Ullman tell me they give them full dosage or none at all. Tumors respond differently to a maximum dosage so that their response aids in typing the tumors but radiologists will not attempt a "grading of tumors". Until they or some one offers a better method let us grade them cytologically.

We still have such a multiplicity of classifications and nomenclatures of tumors that they are useful only as a hat rack is, to get something off your head.

A modern tissue pathologist's report should contain something besides a long and to the average doctor meaningless description of a tissue pattern and a sterotype name for a tumor; in the first place because he owes it to the referring doctor to give him some of his knowledge of the tumor presented, and in the second place because the average doctor knows relatively little tumor pathology.

We need a simplified classification of tumors. Simplification of the present descriptive classification by embryologic and cytologic aids fails in many instance for the cell lineage can not be traced in highly malignant tumors.

When both embryology and cytology fail us we may well turn to a classification based upon a factor which seems to go hand in hand with their most striking clinical distinguishing feature; namely, longevity of the tumor host.

We have a practical clinical classification then according to their degree of malignancy measured by longevity. Can we arrive at the same classification by a study of the tumor tissue under the microscope?

Dr. Broder's utilization of the principle of percentage of cellular differentiation in relation to a tumor's "degree of malignancy" coincides fairly accurately with this clinical classification. This is irrespective of the site of origin, embryology if known, or tissue pattern. Clinical experience and increasing numbers of pathologists now urge the grading of tumors into different classes of malignancy.

The age of the patient, duration and size of growth, glandular involvement and tissue reaction and radio-sensativity are all important factors to be taken into consideration in prognosis and treatment, but the grade of malignancy is most important in a tumor's life history and the host's prognosis. The earlier a tumor is treated, other things being equal, the better the results. Next in importance is, I believe, the degree of malignancy based upon the degree of differentiation of the cells.

I would close not by making a plea for all pathologists to grade tumors but to keep an open mind and careful pathologic notes to correlate with clinical results and make the tumors grade themselves in terms of longevity.

If the tissue picture corresponds quite closely then "grading of tumors" is possible. When Dr. Lindberg reports his clinical results as he has promised to do, I believe that will track closely with the cytologic-histologic picture.

R. A. GLENN, M.D. Merritt Hospital, Oakland: It is with considerable difficulty that one attempts to present a discussion of so comprehensive a paper as that of Dr. Lindberg. Particularly so since the opinions therein expressed are those with which I am in so thorough accord.

The final word as to the histogenesis of cancer must perforce be written on that happy day when we know all the facts about the etiology of this disease. Until then it must remain a matter for academic controversy. Let those whose praiseworthy efforts are devoted to that research ponder the matter. But for those of us whose labors deal with the present day problem of the clinical management of the unfortunate patient suffering from cancer, by far the most important consideration is the acquisition of all the available, dependable, pathological data which, when contributed to the ensemble of the knowledge and skill of all those to whose care the sufferer has been entrusted, spells "Hope" for that sufferer in no uncertain terms.

There is no doubt in our minds that, in a given case of malignancy, the very best treatment the patient will ever receive is, or should be, the first attack; any subsequent efforts to combat the disease are merely gestures to postpone the inevitable. In the concerted first attack on which the life of the patient so abundantly depends, the pathological report, as the essayist points out, is the key position in the diagnosis of cancer. It was with the hope of further enhancing the enlightening value of that report that pathologists in great number, dissatisfied with merely the histological recognition of cancer, have followed the teachings of Broders and attempted to express an opinion, based on standardized methods, of the degree of malignancy present as a further guide in the management of the condition.

No one will claim that histological differentiation is the only factor upon which the degree of malignancy rests. Certainly the location, the duration, the amount of fibrous infiltration, etc., are all worthy of consideration. There is also the uncertain factor of the resistance of the patient himself which introduces an element utterly intangible in this as in all other illnesses to which human flesh is heir. However, we believe that there is fundamental worth in cancer grading based on histological differentiation and that its employment is a material advance in the method of clinical cancer control.

OVULATION—STERILE AND FERTILE PERIODS

CYRUS W. ANDERSON, M. D.
Denver, Colorado

(Read before the New Mexico Medical Society, at its Fifty-third Annual Session, held at Albuquerque, N. M., May 23-25, 1935.)

The medical profession is slow to accept the new and revolutionary Ogino-Knaus Theory or Law of sterile and fertile periods. The so-called "relative safe period" (first described by Capellman in 1883) hinted at in the older text books and softly mentioned to us at medical school had no scientific foundation. With the accumulated evidence as to the time of ovulation, the scientific experimentation in regard to the life of the sperm and the unfertilized ovum, and the statistics of clinical trial, we have a method for avoiding or accomplishing fertilization at will.

The purpose of this paper is not to be construed as advocating birth control. There is no sect or creed that forbids abstinence. The orthodox Jews were not permitted to have intercourse for seven days after menstruation had ceased, during which time the Jewess was considered unclean. Some ancient Jew may have had a fairly accurate knowledge of the physiology of fertilization, and timed intercourse so that it would be most desirable and most effective by keeping the men and women apart for a week prior to the period of estrus and ovulation. It has been noted among Jews who still practice this orthdox custom that women with menstrual cycles as short as three weeks are usually barren; but by shortening the period of abstinence following menstruation they conceive.

The aptitude of the Cahtolic Church toward thsi method of avoiding conception is well put in the statement of His Eminence, Cardinal Bourne, Arch-bishop of Westminster, who said, "There is no law requiring married people to have large families and if they wish to live in continence they are entitled to do so but they are absolutely forbidden to exercise the act of generation AND FRUSTRATE its natural purpose."

Five to seven days is the maximum period of fertility during any one month in the average human female. A study of the variations of each individual cycle is imperative because there is no such thing as an absolutely regular cycle. Even with the variations of a day or two fertile periods may be accurately enough scheduled to require abstinence of little if any more than a week. If the wife is intelligent enough to know her sterile and fertile periods she can be free from worry and fear of conception for 18 to 20 out of 28 days. Recognizing the symptoms of ovulation increases the number of sterile days.

Information concerning her own body organs certainly should be available to any married woman. There is a crying need for sound medical advice on marital relations and the physician should be the source of information.

The physician cannot convey to his patients facts on ovulation, sterile periods and fertile periods, without knowledge of the physiology of fertilization.

Fertilization is the union of one spermatozoon with the female ovum or egg.

Usually only one ovum is liberated each menstrual cycle and only during the ovulation phase. Its span of life is only a few hours unless fertliized. It is dependent upon outside influences for locomotion.

Millions of spermatozoa are deposited in the vagina at each ejaculation; equipped with efficient means of locomotion (the tail) they may propel themselves two inches or more per hour,

perhaps through the uterus to reach the fimbriated ends of the tubes in two to three hours. They do not live for weeks in the female genital tract and are not capable of fertilizing an ovum after 72 hours in the female.

The pituitary gland—the motor of ovarian function—plays an important role in regulation of the phases of the menstrual cycle—by means of hormones.

The menstrual cycle has foud natural phases: The follicular, the ovulation, the luteal, and the destructive, (F. O. L. and D. phases). The pregnancy cycle has these same four phases. (This is Dr. T. Mitchell Burn's[1] classification. He was the first to call our attention to the unanimity of the pregnancy and menstrual cycles.)

During the follicular phase gonadotropic hormone "A" from the anterior pituitary stimulates the growth of the ovarian follicle and the follicular hormone in this growing follicle in turn causes hypertrophy of the endometrium[2]. The endometrium during the follicular phase has long straight, narrow glands.

In the ovulation phase there seems to be a substance causing ovulation[3]. Perhaps it is only fractionary or more likely a combination of gonadotropic hormones, A. and B. In some animals, particularly the rabbit, intercourse is necessary before ovulation takes place and then it occurs within 10 hours. It can be brought about by the injection of prolan and even by mere handling. In the human intercourse is not necessary but there is evidence that ovulation may be hastened somewhat (24 to 48 hours) by intercourse. During the ovulation phase hypertrophy occurs in the glands of the endometrium.

During the luteal phase gonadotropic hormone "B" causes luteinization[2] of the follicle and the corpus luteum in the ovary in turn causes further hypertrophy and hyperplasia of the endometrium, in preparation for nidation. This has been called the pregravid endometrium. A broader term is needed for this type of endometrium because it is found more often before menstruation where there has not been fertilization.

The destructive or menstrual phase is precipitated by a substance which we designate as anterior pituitary destructive hormone which causes hemorrhage into the corpus luteum[4]. This is followed by endometrial sloughing and bleeding—true menstruation. There has been much wrangling as to whether or not menstruation is ever anovulatory in the human female. Uterine bleeding is not always true menstruation[1]. Women may bleed at the time of ovulation.

The old theory was that the ovum came directly from the definitive germ cells which sprang from the primordial germ cells and that there were a limited number of these definitive germ cells present at birth and when these were exhausted the woman was ready for the menopause. The present accepted theory[5] is that the definitive germ cells come from invaginations of the germinal epithelium surrounding the ovary and that millions of ova are formed in the ovary just as millions of spermatozoa are formed in the testis; very few of the ova reach maturity.

Anterior pituitary hormone has little or no effect upon an immature follicle but upon one with antrum formation it starts the follicular phase. As the follicle ripens it approaches the surface of the ovary. The ripening process has been compared macroscopically to the ripening and rupture of a boil. At the time of rupture it is possible for many women to detect symptoms, not of pain necessarily but discomfort similar to indigestion.

Fertilization can take place only when sperm is deposited at or near the time of ovulation.

At the time of ovulation the plug of mucus in the cervix is characteristically clear and watery.

Fertilization takes place in the ampulla of the tube. The fertilized ovum is several days en route to the uterus during which time it grows to perhaps the mulberry stage.

Nidation takes place eight to 12 days after fertilization.

As the spermatozoon enters the ovum the second polar body is given off. The head of the sperm becomes the male pronucleus; the neck becomes the centrosome; the nuclei come together, fuse, and then separate and the cell is ready for division.

Fertilization from an intercourse immediately before a menstrual period is rare but cases have been reported and are cited as arguments against the safe period method. Some of these cases can be explained as being due to overlapping of phases for it follows that if ovulation always precedes menstruation by 14 days, a

woman who menstruates 14 days would necessarily be menstruating and ovulating at the same time. Sperm lingering in the ampullae of the tubes could easily fertilize an ovum from such an ovulation. If this newly fertilized ovum went directly to the uterus it undoubtedly would be washed out with the menstrual blood as the endometrium is not in condition for nidation at this time; but the ovum is several days enroute to the uterus during which time the endometrium prepares for nidation. Other cases can be explained like the case which will be reported later in this paper.

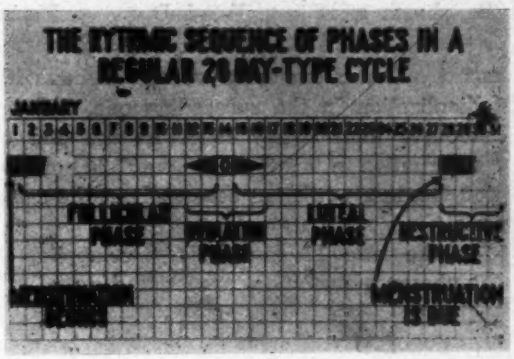
With an understanding of the phases of the menstrual cycle and with coitus coincident with, or different from, the time of ovulation a physiological method of accomplishing or avoiding conception usually is possible. Widely irregular cycles, incorrect determinations of the time of ovulation, carelessness and other factors, contribute toward lowering the percentage of success.

It is the duty of every physician engaged in general practice to familiarize himself with this physiology in order that he may adequately instruct his patients.

There can be no mixing or mistaking of dates if sterile periods are to be depended upon. Keeping accurate records of menstruation is the first lesson that should be taught the patient. Although menstruation "D phase" is the last of the four phases the beginning of the flow must be the basis on which to calculate the on-coming cycle. It must be borne in mind, however, that a menstruation does not govern the time of the succeeding phases; but by the expected date of the onset of the period based on a fairly regular periodicity it is possible, to chart with a fair degree of accuracy the phases of the on-coming cycle, and predict the time of ovulation and the sterile and fertile periods.

The rhythmic sequence of phases in a regular 28 day type menstrual cycle is as follows:

We may represent this sequence of phases with the letters F-O-L-D. Successive cycles follow the same rhythmic arrangement: F-O-L-D-F-O-L-D-F-O-L-D. Many women by careful observations may determine the exact times they ovulate. The symptoms are sensed in the region of the umbilicus, a region for referred pain from the 10th dorsal nerve. The symptoms to begin with are much like the discomfort arising from gas in the intestines. There may be a slight bearing-down sensation similar to menstrual cramps. Variations of the severity of the symptoms from month to month

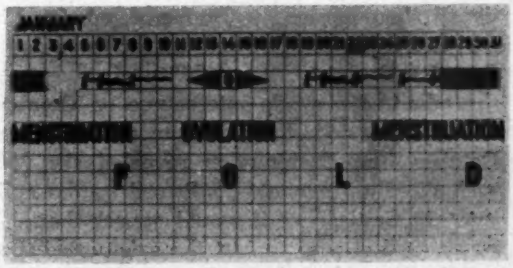

THE RYTHMIC SEQUENCE OF PHASES IN A REGULAR 28 DAY-TYPE CYCLE
JANUARY
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28
FOLLICULAR PHASE
OVULATION PHASE
LUTEAL PHASE
RESTRICTIVE PHASE
MENSTRUATION IS DUE

are the rule in most women. Slight increase in vaginal secretions is usual and bleeding at the time ovulation is more common than supposed.

When conception is desired intercourse should be on or just before the day of ovulation.

To recapitulate: To facilitate the calculation of the periods of fertility and sterility, the following facts must be considered: Even in women with regular periods a day or two variation in the time of ovulation is to be expected; sperm retains its fecundity for 72 hours; ovum is capable of being fertilized for a maximum of 48 hours; the symptoms may be felt some hours before actual rupture of the follicle occurs.

In the following chart "i' indicates intercourse and the waving line represents the length of the life of the sperm. Sperm must live to the day of ovulation for conception to take place.



In cycles longer than 28 days there is a rest period between the phases (designated by x). This corresponds to the lacation period of the reproductive cycle. Diagrammatically, the cy-

cle is: F-O-L-D-X-F-O-L-D-X-F-O-L-D-X. In cycles shorter than 28 days, i.e. a twenty-one day menstrual cycle there is an overlapping of

F-O-L-D

the phases as: F-O-L-D Hence

F-O-L-D

menstruation in one cycle is simultaneous with folliculization in the succeeding one, and intercourse immediately following the end of menstruation in this type will result in conception, because ovulation occurs about the same time.

In the rare 14 day cycle, overlapping of the phases is even more pronounced as:

F-O-L-D

F-O-L-D

F-O-L-D.

Because of variations in the time of ovulation it is imperative for the physician to study the menstrual cycle in the individual patient. Many charts are available which simplify determinations of periods of fertility. One of these is the "ovulation time table." It is the only one which calls attention to the symptoms of ovulation. Recognizing the symptoms is the key to success in application of the method.

One other caution: Do not confuse ovulatory bleeding and "Mittelschmerz" with menstruation. Many women, especially those who give histories of short cycles now and again are having ovulatory bleedings between menstrual perods. I can best illustrate this point by citing a case:

A white woman, 25, was seen November 2, 1934 complaining of nausea of four days duration. Menstruation was of fairly regular 28 day type. Last two periods were early, September 16 and October 4: the period on September 16 about four days early; one day overdue. Questioned about period on October 4, admitted it was scanty but she had spotted for three days. Questioned about the possibility of pregnancy she admitted a single intercourse on October 2nd, just previous to the last menstruation on October 4th. Examniation revealed she was undoubtedly pregnant—confirmed by the A.Z. test. At first glance it would appear that she was a perfect case against the safe-period theory; but let us analyze: The menstruation on September 16th was about four days early. Usually if one period is early, the next period is correspondingly late, and we would not expect the next period until October 16th to 18th. If menstruation was due October 18th, ovulation was due October 4th. This is the day she had bleeding. Intercourse had been indulged in two days before, at the ideal time for fruitful coitus, and during the theoretical time for estrus for women.

The efficacy of the safe period method, as shown by many investigators, is about 97 per cent. The most skeptical women eventually become the most enthusiastic disciples of the method, once they find they can detect the symptoms of ovulation. It is intensely interesting to analyze a series of menstrual cycles and one will be surprised to find how many women can be taught to recognize ovulation, if he will but spend a little time explaining the physiology, and when, where and how to look for the symptoms. Usually the unnatural contraceptives are discarded within a few months after this method is learned. Patients should be warned that all contraceptives fail sooner or later in fertile periods.

The average young couple today is not shirking responsibility of offspring. In most homes children are wanted. Most pitiful are those homes where nature has denied them. Proper instruction as to the use of the most likely time for conception has brought happiness to many couples who believed themselves sterile. I earnestly believe that physiologic timing of fertilization and of offspring will permit better pre-natal care, better obstetrics, better pediatrics and finer babies than when they come at no designated time and no chosen intervals.

BIBLIOGRAPHY

1. Burns, T. Mitchell: Unanimity of Pregnancy, Menstrual and Estrus Cycles. Colo. Med. 30:381 Oct. 1933.

2. Fevold, H. L., Hisaw, F. L., Hellbaum, A., and Hertz, R.: Sex Hormones of the Anterior Lobe of hte Hypophysis. Am. Jour. Physiol. 104:710, 1933.

3. Hinsey, J. C., and Markee, J. E.: Studies on Prolan-Induced Ovulation in Mid-brain and Midbrain Hypophysedtomized Rabbits. Am. Jour. Physiol. 106:48-54 Oct. 1933.

4. Faulkiner, N. M.: A Study of the Human Corpus Luteum at the Time of Menstruation and in Pregnancy. Irish Jour. of Med. Sciences. 6:85 Jan. 1933.

5. Curtis' Textbook of Gynecology (Saunders 2nd Edition, 1933) Vol. ii.

The Maricopa County Medical Auxiliary announces that it is interesting itself more and more in the promotion of health education. Regular meetings are held the first Monday of each month. Invitations have been issued by the auxiliary for a Japanese Sukyaki dinner for Dec. 5, 1935, at the home of Dr. and Mrs. Ferd G. Holmes.

A PREVENTION OF BLINDNESS PROGRAM FOR NEW MEXICO

LEWIS H. CARRIS
Director, National Society for the Prevention of Blindness.

(Read before the New Mexico Public Health Association, May 1, 1935, in Santa Fe.)

I am here on invitation of your State Director of Public Health to discuss with you the planning of a prevention of blindness program for New Mexico. In making preparations for this task, I am torn between two desires. My first desire is to set the standards high, since your new health district plan gives you a corps of trained public health workers who are already aware of the needs which I shall present and, I assume, eager to meet those needs. On the other hand, I am aware that, even with your new set-up, you will not have overcome the handicaps due to distance and scattered population, to the variations in language and customs among your people, and to the remoteness and inadequacy of facilities for medical care. Therefore, my advice in general is that you be guided by the principle of "helping others to help themselves." By this I mean that it is desirable to make every possible use and adaptation of available facilities, to give to responsible volunteers knowledge and skill which will supplement the services of your staff, to stimulate public opinion to support your requests for appropriation and authority, and to organize demonstration projects in limited areas, giving publicity to achievements in order to encourage other districts to follow the example.

Our experience has shown that best results are obtained where the responsibility for the program is centralized. This does not mean that the varied activities, many of which are not undertaken primarily for conservation of vision or prevention of blindness, should be under the direction and supervision of a single individual or committee. It does mean that such individual or committee shall review all existing and contemplated programs in order to advise on the incorporation of specific items or activities that will help to prevent blindness. To be well prepared for this responsibility, at least one member of this group should devote time to intensive study of the subject and should be in continuous touch with sources of information and new developments. If it should prove feasible to have a member of your staff devote considerable time to this phase of public health work, the National Society for Prevention of Blindness will cooperate in giving necessary preparatory training.

Since I am not familiar with details of your organization or plans for extension of health services already worked out, recommendations which I make as to handling specific problems are to be considered as merely suggestive. The important thing, as I see it, is to present the activities essential in a well-rounded prevention of blindness program. These are:

Prevention of Congenital Eye Defects Due to Venereal Diseases: In setting up a venereal disease control service you make a real contribution toward prevention of blindness. The National Society for the Prevention of Blindness has allied itself with other national health organizations and with the American Medical Association to educate the public to appreciate the importance of including in the prenatal care of every pregnant woman laboratory tests to detect gonorrhea or syphilis that infected mothers may be treated and babies saved from blindness, eye defects and other handicaps due to venereal disease. Therefore, we strongly recommend:

That your state and district health bureaus reinforce this teaching by incorporating similar suggestions in their own prenatal literature: that you make maximum use of the educational material which will be presented to you from time to time by our own and other national organizations; and that in the venereal disease control service which is being organized for the state, particular attention be given to providing facilities for examination and treatment of pregnant women.

Prevention of Ophthalmia Neonatorum: Your state bureau of health is already requiring the use of a prophylactic in the eyes of the newborn, the reporting of cases, etc. Although statistics from the school for the blind may not be entirely reliable, it appears that the incidence of blindness due to ophthalmia neonatorum is high in New Mexico. Dr. Earp believes that cases occur most frequently among families which do not call in trained attendants at birth. It would seem desirable to strengthen the control procedures in the following respects:

Intensive instruction to licensed midwives in the technique of applying the prophylactic and importance of prompt reporting of suspected cases; an intensive study of all cases occurring during a

limited period to discover weak points in the procedures and in enforcement of regulations; adequate medical and nursing care in each health district or county; increased amount of free prophylactic to be omitted if parents object to its use, should this prove a real obstacle to enforcement; public education on the importance of preventive measures, making special effort to reach all prenatal cases; and facilities for diagnosis and treatment of gonorrhea in pregnant women.

Care of Eyes during Pre-school Age: When plans are being made for preventive health service include vision testing and eye examination. In planning corrective eye service for school children, consider also the needs of the preschool age group. (Example: development of squint clinics.)

Care of Eyes during School Age: Whether this service is the responsibility of the school authorities or of the health bureau, certain essentials should be provided for.

With limited public health nursing service available to each school, it will be important to arrange for the training of teachers to detect the children needing orthalmological examination by means of vision testing, eye inspection and observation of symptoms of eye difficulties. Teachers may also assist in follow-up.

Facilities for correction of vision defcts or treatment of eye diseases should be available continuously in each district or at least periodically through traveling clinic services. Since the medical directory shows only 14 physicians specializing in eye, ear, nose and throat work, located in seven counties of 31, the need for eye service in the state is evidently out of proportion to the available physicians. **Your state medical society might be interested in working out a cooperative plan to increase facilities for this important branch of medical service.**

Inspection of classroom enviornment and teaching methods to detect factors which may affect eye health and comfort of children is another essential. We understand that the State Department of Education has already incorporated in its requirements for "approved" schools the essential items included in the National Society for the Prevention of Blindness appraisal form and has made a wise use of work relief funds in bringing some schools up to standard. With guidance both teachers and pupils can contribute to the check-up of classrooms and be taught to make best use of available facilities.

Material on eyes should be included in the health education curricula and an opportunity should be given to apply desirable eye health habits in schoolrooms.

Facilities should be provided for special education of children who are not blind but have vision which is so poor as to make the use of ordinary textbooks, etc., difficult or unsafe. Since there will probably not be enough of these children in any one place (with the possible exception of Albuquerque) to warrant the establishment of a sight-saving class, it is recommended that the state department of education keep available special equipment to be supplied to teachers upon request, this service to include advice on special methods and eye care. Approximately 200 children will need this type of help. If no other plan seems feasible, sight-saving classes can be established in connection with the school for the blind, classes to be conducted by specially trained teachers using approved methods and equipment. Apparently some of these children are already enrolled in the state school for the blind.

Prevention of Eye Accidents: We recommend:

The inclusion among your health education publications and lectures of material related to the prevention of eye injuries from industrial hazards, firearms, fireworks, dangerous toys, automobile glass; and an investigation (in cooperation with the state labor department) of processes involving eye hazards in industry, followed by the establishment of necessary safety regulations, such as wearing of goggles, use of machine guards, etc., to guard against these hazards.

Education of the Public on Eye Care: We advise the inclusion in publications, lectures, etc., of information on the importance of good eye habits, the value of periodic eye examination, the need for special care of eyes during periods of illness, recommendations on restricted eye use during convalescence, etc.

Facilities for Eye Care:

As already mentioned in connection with medical care for school children, the medical society and health bureau should work out a plan for bringing into each district (preferably each county) a physician specializing in eye work, at least preiodically. This service should include corrective treatments and surgery in addition to examinations.

Apparently the trachoma problem in your state is confined to the Indian population, hence there may be no need to supplement the work of the United States Public Health Service among Indians.

The school for the blind and organizations working with adult blind should, as a prerequisite to entrance for other services, require adequate ophthalmological examination to determine the cause and extent of the handicap. Ophthalmological service to this group should include such surgical or medical treatment as may be necessary to give maximum improvement in vision. Standards for admission to schools for the blind should be adopted.

The services of medical social workers or public health nurses should be available in making contacts between patients and ophthalmologists and in keeping under treatment cases in danger of blindness.

If this list of suggestions has seemed to you interminable and quite out of proportion to your available funds and personnel, you may be glad to know that I am not so optimistic as to believe that you can start with a full program. This summary was intended to give you a bird's-eye view of your state some years hence. My advice would be that you build your program gradually and build it for permanency.

In conclusion, I wish to emphasize again the importance of centralizing in a single person or group the responsibility for coordinating existing services and developing new ones.

PROSTATIC OBSTRUCTION

H. C. BUMPUS, Jr.
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(Read before The New Mexico State Medical Society at its Fifty-third Annual Session, held at Albuquerque, N. M., May 23-25, 1935.)

Radical changes in the method of treating any disease not only arouses enthusiasm among its originators, but usually incurs an even stronger opposition among those who have used a well established procedure for many years. The medical profession as a group usually approve that trite saying, "never be the first by whom the new is tried nor yet the last to lay the old aside." At the present time the treatment of prostatic obstruction is undergoing radical change and it seems pertinent therefore to review and evaluate the newer ideas and methods of treatment.

First let us consider the question of abruptly emptying a bladder that has become greatly distended from the chronic retention of urine, the result of prostatic obstruction. In the past it has been held imperative to empty such a bladder slowly, consuming from many hours to many days in the process because of fear that the abrupt withdrawal of urine may result in serious, if not fatal, consequences. Creevy[1] points out that there is no proof that abrupt withdrawal of urine is responsible for fatalities and believes that the frequent serious reactions are due to infection from catheterization. To prolong catheterization over a period of hours or days, he asserts increases the chances of infection from which the majority of cases die. He was unable, in 68 postmortems which he studied, to find evidence that death may result from the mechanical effect of sudden emptying of the bladder.

Such patients are usually markedly dehydrated with dry tongue and skin, all available fluids in the tissues having been drawn upon to dilute the ever increasing nitrogenous end-products. The kidneys, damaged by long continued back pressure, can only secrete in greater and greater dilution so that the specific gravity of the urine becomes lower and lower, and a greater fluid intake is necessary to meet this need. It is, therefore, better to empty such a bladder at once to rid the patient of as much toxic material as possible, and at the same time to commence intravenous administration of normal saline solution. This, if given slowly, may be continued for hours until many liters have been absorbed. Fluid by mouth is not so efficacious, and if pushed beyond tolerance, which is frequently low, may lead to water intoxication, a most serious complication in these dehydrated old men.

DRAINAGE: If the amount of residual urine exceeded 100 to 150 c.c., it formerly was considered by many to be good practice to leave the catheter in place in the urethra. The patient then underwent a so-called period of preparation, prior to operation. Clinical experience has now taught us that such a period of preparation is not desirable in all cases.

If the renal function is markedly impaired, preparation before operation will improve it, but if renal function is adequate, a period of drainage becomes unnecessary and may be harmful. Cabot and Meland[2] in reviewing a large series of cases show that if the urethral catheter is left in place for an extended period, a marked febrile reaction is apt to commence on about the fifth to seventh day with all the classic symptoms of an acute pyelonephritis. The natural secretions of the urethra having been blocked by the indwelling catheter and the prostatic urethra traumatized by its presence, bacteria readily enter the blood stream from such a favorable point of absorption as the posterior urethra. Before an acute infection is overcome, the patient has usually lost ground physically, and his renal function is apt to be temporarily impaired rather than improved.

If damaged renal function makes drainage imperative for an extended period, then suprapubic drainage is the method of choice. If this is carried out under a local anesthetic without opening the pre-vesical space or exposing more of the bladder than is required to insert a catheter, little systemic disturbance results. When drainage is required for a short period, intermittent catheterization is less likely to result in secondary infection.

Infection: Until recently many of the complications following surgery of the prostate, and not an inconsiderable percentage of the mortality, was attributable to inadequate renal function resulting in uremia or cardio-vascular

disease. Sufficient preliminary treatment in properly selected cases has removed the menace of uremia, and the electrocardiogram has warned against the placing of too great a strain on a weakened myocardium. Today infection is the chief obstacle to uneventful convalescence, and the most frequent cause of death. In the past too much dependence has been placed on urinary antiseptics, and aseptic technique too frequently disregarded. For instance, catheters are frequently inserted with elaborate aseptic technique and then allowed to drain into bed urinals. Such receptacles are teeming with bacteria, and if the bladders are irrigated these organisms are washed back into them. When the urinals are emptied, the ends of the catheters fall against the anus and a direct subway entrance, as it were, is provided for bacteria from the bowel to the bladder.

All drainage from the bladder should run through sterile tubing to receptacles outside of the bed and the connections should never be opened except under aseptic precautions. If this technique is followed, one will be surprised at the diminution of postoperative febrile reactions. It is also well to remember that it is difficult for the more common bacteria, which frequent the urinary tract, to live in acid media while some of the most virulent and resistant types flourish in alkaline urine; therefore, the rendering of the urine bactericidal by its acidification is advisable. This can be accomplished by the giving of ammonium chloride or ammonium nitrate by mouth in the majority of cases, but in some individuals considerable difficulty may be encountered in lowering the pH of the urine sufficiently to stop the growth of bacteria. In such cases, the placing of the patient on a ketogenic diet for a week to 10 days will usually increase the acidity of the urine so the pH reading will be below five. Such a diet, in addition to producing a germicidal effect from the increased acidity, also liberates beta-oxybutyric acid in the urine, which Fuller[3] has demonstrated is the chief factor in the germicidal effect of the urine.

Such diets are difficult to take and must be closely adhered to if favorable results are to be obtained. Clark[4] has recently tried to simplify them so that they may be prescribed without detailed dietetic knowledge by the physician and prepared in the average home without special supervision. His menus are so arranged that regardless of the items selected from the different groups, the daily intake of food will consist of carbohydrates 15-20 grams, protein 35 to 50 grams and fat 300 to 325 grams. His most simple combination consists of one and a half pints of 40 per cent whipping cream and six eggs a day. Such a dietary regime has frequently proved valuable as prophylactic measures before undertaking surgical correction of the prostatic obstruction.

Transurethral Resection: In advising a man with an enlarged prostate as to the best method of treatment, his clinician was formerly confronted with the relative merits of the suprapubic and the perineal operations. The former being technically easier was more generally used, for, in spite of its higher mortality it was more likely to be followed by good functional results. The perineal operation incurred a much less risk to the patient's life but unless carried out by the specially trained was apt to have a poor functional result. Today transurethral resection seems to combine the advantages of both the former operations and has fewer of their disdavantages. However, like the perineal operation it requires special training and is not a procedure for the occasional operator. Both older operations were designed to remove the entire mass of hypertrophic tissue though only a small portion of it might be causing the obstruction; the prostatic urethra being barely one cm. in diameter an exceedingly insignificant amount of tissue may seriously obstruct it.

A normal prostate weighs from 18 to 23 grams, and in checking the weight of 575 consecutive specimens removed suprapubically[5] I found that only 33 per cent weighed more than 50 grams. So it is evident that in the great majority of cases of urinary obstruction due to prostatic hypertrophy removal of tissue up to, let us say, 25 grams, should eradicate the obstruction and restore function. Such an amount can readily be removed through the urethra.

This fact is responsible for the rapid replacement of prostatectomy by transurethral resection in spite of many unfortunate complications and not a few fatalities that have attended the use of this newer method by the inexperienced and untrained. During 1934 my former associates[6] at the Mayo Clinic applied this method of treatment to 630 cases with but two

deaths. The instrument used was one I developed incorporating the punch principle of excision as first advocated by Young with the direct cystoscope of Braasch. This instrument gives adequate vision even in the presence of considerable bleeding and removes the obstructing tissue by cutting with a knife instead of burning with a desiccating current, a most important difference, for incised tissue heals rapidly while coagulated tissue must not only heal but the eschar must slough away or be absorbed, all of which greatly prolongs convalescence and invites secondary infection. Dr. Thompson*, in his recent report, states that all but 13 per cent of the 630 cases just referred to left the hospital within two weeks.

Transurethral resection is applicable to all but the largest glands provided the patient is willing to spend the time necessary for multiple resections, for to remove more than 25 to 30 grams at one time is usually to prolong the operation beyond the time limit at which the best results are obtained. Experience has shown that multiple resections are preferable to a prolonged single procedure in which trauma to the urethra, may be excessive.

The permanency of this new procedure compared with prostatectomy has been questioned. I find about four per cent of my cases returning—a percentage of recurrence that is a little less than the possibility of death was by the suprapubic method. These recurrences are given the choice of prostatectomy or a second resection. To date none has chosen prostatectomy.

Transurethral resection today stands in much the same place as that in which lithotrity stood in Bigelow's time. The principle of transurethral resection is sound, and is based on the same reasoning as is litholapaxy, namely, that it is unnecessary and often dangerous to perform a major operation in order to remove in its entirety an obstruction to the urinary stream that can be removed equally well in small segments, at much less risk to the patient.

Although litholapaxy has been standard for 50 years, and even been considered by some urologists as an office procedure, yet today suprapubic cystostomy, for removal of stone in the bladder, is far more frequently employed than is litholapaxy.

Fifty years from now I dare say it will be equally well appreciated that transurethral resection is a safer procedure than is prostatectomy and that the duration of hospitalization for transurethral resection is short in comparison with that for prostatectomy. However, prostatectomy may still be more frequently practiced, for the same reason that suprapubic cystostomy for stone is used more frequently than is litholapaxy. An instrumental procedure such as transurethral resection requires skill and special training, whereas suprapubic prostatectomy requires but little of either.

The patient on whom litholapaxy or transurethral resection is performed usually can return to his occupation in from a few days to a week or two. He has, as a souvenir of his adventure, a few fragments of stones or a few small chips of tissue. In contrast is the patient from whom a stone or prostate gland has been removed suprapubically. He has had weeks in the hospital, with a suprapubic drainage tube part of the time. He can show the removed stone or prostate gland and when "speaking of operations" can exhibit the scar and not infrequently a good-sized postoperative hernia. He is much more likely, of course, to consider the surgeon's skill favorably than is the patient who has none of these physical signs of his encounter with a member of the medical profession to exhibit, and has simply resumed normal urinary function after a short period of partial incapacity. I stated that 50 years might find resection in the same position as that occupied by litholapaxy today, but this seems doubtful, for if surgeons tend to be too conservative, erring on the side of what they consider to be safety, the public does not. Stones in the bladder are comparatively rare, and the value of litholapaxy as a curative procedure is not generally appreciated by laymen. Prostatic hypertrophy is common, and many of those who are afflicted are at the age of retirement and have little to do on returning home but to discuss experiences. When these experiences have consisted of only a few days in the hospital, and when the functional result is the equal of, and often is superior to that of a neighbor who has put in six long weeks undergoing prostatectomy in two stages, it is going to be increasingly evident to the patients. They are little concerned with dogma, and

much with what they think of as horse sense. They know that a procedure that requires weeks of hospitalization and carries a high mortality rate is not so good as one that carries a mortality rate of approximately one per cent and usually entails hospitalization of less than a week.

The cause of hypertrophy of the prostate has remained during all these years an unsolved problem, although the literature has never been lacking in the presentation of theories. This year, however, the solution seems nearer. Lower and his associates[7] at the Cleveland Clinic have isolated a water soluble hormone from the testicles of bulls. This they have named "inhibin" because they believe it inhibits the gonad stimulatory hormone of the anterior pituitary. This later hormone, familiar to many as "antuitrin S," is presumed to stimulate the interstitial cells of the testes to excrete "androtin," the male sex hormone. This in turn causes the prostatic hypertrophy and the resulting urinary obstruction. Because this hypertrophy usually occurs at the time of diminished sexual activity, they believe that inhibin comes from the spermatogenic cells, and as their activity diminishes, inhibin diminishes and androtin increases, and with it prostatic enlargement occurs. With the administration of inhibin they hope to shrink the prostate much as the administration of antuitrin S is employed to enhance the descent of the testicles. As a prophylactic measure it sounds encouraging; as a curative procedure after hypertrophy has occurred its efficacy remains to be demonstrated.

BIBLIOGRAPHY

1. C. D. Creevy: Sudden Decompression of the Chronically Distended Urinary Bladder, Arch. Surg. 25:356-385, August, 1932.
2. Hugh Cabot and E. L. Meland: The Problem of Drainage in Preparation for Operations for Prostatic Obstruction, Proceedings of the Inter-State Postgraduate Medical Association of North America, 1932.
3. A. T. Fuller: The Ketogenic Diet—Nature of Bactericidal Agent, Lancet 1:855-856, April 22, 1933.
4. A. L. Clark: Bacilluria, J.A.M.A. 104:289, 1934.
5. H. C. Bumpus: Results of Prostatic Resection Over a Period of Seven Years, J.A.M.A. 99:1836-1840, November 26, 1932.
6. G. J. Thompson: Transurethral Surgery in 1934, Proc. Staff Meet Mayo Clin. 10:220-223, April 3, 1935.
7. W. E. Lower: A Further Report on the Hormonic Control of Prostatic Function, Trans. Am. Assoc. Genito-urinary Surg. 27:15-17, 1934.

TREATMENT OF FRACTURES OF THE FEMUR SHAFT

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Our ideas on the proper management of fractures have been radically changed, especially as regards fractures of the shaft of the femur. Our general trend is toward more conservative and efficient measures. The increasing incidence of fractures in traffic accidents and the greater demand by insurance companies for satisfactory results in industrial injuries, not to mention the great lessons that were learned about fracture treatment during the World War, have spurred the orthopedic surgeons to more thorough methods.

We must review the various femoral shaft fractures as to type—simple, compound, or comminuted—the line of fracture—transverse or oblique—the location, the deformity, and finally the complications. In many cases the break in the bone is the least important part of the injury, being quite secondary to traumatic shock, hemorrhage, and nerve disturbances. Hence we must include in our therapy the consideration of the hip and knee joints. for after all the final result will be judged more by the weight bearing alinement and joint function than by a slight shortening or bony angulation.

After diagnosis by history of injury, pain, loss of function, localized tenderness, deformity, shortening, false motion and pain on active or passive movement, we must determine whether treatment should be instituted for pain, shock, hemorrhage or other soft tissue complication. After first aid treatment, transportation to the hospital must be effected.

Take care of shock and hemorrhage first. Then decide what portion of the shaft is involved and upon the deformity and, or, shortening. In general the site of the fracture determines the character of the deformity and method of treatment; in cases of direct violence any deformity may be found.

We may have the extracapsular fracture of the neck involving the trochanter with the

flexion, abduction and external rotation of the upper fragment; the intertrochanteric type separating the two trochanters with more abduction and external rotation of the central fragment shown by displacement backward of the greater trochanter, and displacement forward of the lesser; at the junction of the upper and middle thirds of the shaft, the proximal fragment in marked flexion, abduction and external rotation, the distal in definite adduction on account of the strong thigh adductors making a prominent lateral angulation; we must consider the possibility of producing a coxa valga or increase of the normal angle between the neck and shaft from exerting too much pull in the wrong direction. A fracture through the mid shaft is less difficult to treat because there is less abduction of the upper fragment which is held in check to a great degree by the thigh adductors. In lower fractures, of the supracondylar type, we have an entirely different picture—lower fragment displaced in a different direction. It is pulled far backward behind the upper fragment by the strong gastrocnemius muscle and points into the popliteal space, possibly hurting the popliteal nerves, and usually causing a great swelling of the knee from hemorrhage into the joint. Other fractures include those of a part or all of one or both condyles, and lastly those with comminution into the knee joint. Thus we see that the site of fracture determines the deformity, especially as relates to the amount of abduction of the upper fragment and to the amount of flexion of the lower fragment. And when we realize that the principle of treatment is to bring the lower controllable fragment into the alinement or direction of the central or uncontrollable fragment, we can see how important it is to determine the displacement or deformity.

In addition to the site of fracture, treatment will depend on whether the fracture is transverse or oblique. Likewise we want to know if the patient is very muscular, if he is cooperative or unruly, and lastly of course it is important to remember that the treatment is decidedly different for old fractures with malunion or failure of union. Consideration must also be given to pathological fractures such as occur in new growths, chronic infection, syphilis, and endocrine disturbances.

Fundamental mechanical principles must be brought into play. The purpose of this paper is to advocate certain sound mechanical principles and simplified measures. We can usually avoid open surgery which is often responsible for long delayed convalescence. I am indebted to Bohler of Vienna and Magnuson of Chicago for much sound reasoning, especially in reference to certain almost standard types of splints and methods of traction.

Let me briefly mention some high-lights: **Study the muscles and their pull; bring the fragment which can be controlled into alinement and rotation with the fragment which cannot be controlled; treat the wound, then after recovery from shock reduce the fracture; shock is caused by fracture and made worse by handling; early traction must be maintained; alinement is more important than slight shortening; every fracture must be reduced by traction and counter-traction; Wolff's law of adaptation of a bone to its muscle pull and proper function does not help to overcome poor joint alinement; lesions of soft parts are often more important to consider in treatment than fracture of bone; anesthesia, general or local, should be insisted on in all fractures.**

Treatment begins with first-aid. If the injury has occurred at some distance from the hospital our first duty is that of emergency routine preparatory to transportation. Shock must be combated by warmth to the body and coffee rather than alcohol.[5] Morphine helps. Hemorrhage may require a tourniquet, and temporary sp'int like the Thomas. A long board may be used from the axilla to the ankle. An open wound should be covered aseptically. On reaching the hospital a compound wound is treated by thorough cleansing, a debridement under anesthetic to remove necrotic tissues, and tetanus and gas bacillus prophylaxis; close the wound by primary suture or leave it open and irrigate with antiseptic like Carrel-Dakin.

Determine the location and type of fracture by clinical and x-ray examinations. In simple fractures or compound ones where no general anesthesia has been given, Bohler advocates the immediate injection of 20 cc. of novocaine between the fragments after a preliminary anesthesia of the skin, preparatory to reduction and application of traction upon a suitable frame with or without suspension. Traction may be by moleskin adhesive to the thigh, or

to the thigh and leg, attached to a spreader and rope going over a pulley to connect with sufficient weights or by the Steinmann pin or Kirschner wire through the femoral or tibial condyles, or the icetongs above the femoral condyles. The splint used for holding the limb in traction may be either the Hodgen splint with the bend at the knee, or the more recent Thomas splint with the Pearson attachment to accommodate the flexed knee, or the Braun frame. Extension is accomplished by direct skeletal traction on the femoral fragment with the leg held in flexion, or by indirect means by pulling on the splint, which in turn pulls on the leg by adhesive traction while the knee is flexed, making the actual pull against the calf muscles in the direction of the axis of the upper femoral fragment.

Traction must be in the direction of the upper fragment sufficient to overçome the shortening—and continuous. Shortening can usually be readily overcome by local anesthesia, with the line of the lower fragment controlled by proper abduction of the splint. In the fractures, just below the trochanters, the splint must be oblique in relation to the axis of the bed, less oblique in fractures of the upper third and in a straight line with the bed in mid shaft cases. In supra condylar fractures an entirely different angulation at the fracture site obtains, for the lower fragment is thrown backward. The angle of the splint must be greatly increased at the knee, often to a right angle, so as to bring the distal fragment into alinement. In case of a fixed angle at the bend of the splint, the knee must be placed further down the splint so that the bend of the latter pushes forward directly against the lower fragment.

I believe this sort of management will take care of the great majority of femoral shaft fractures in adults. In children a simple Taylor hip splint with two perineal straps will often be sufficient, as advocated by the late Dr Hibbs of New York, while in young children or infants overhead extension to both limbs with adhesive traction will be sufficient. In children we use a "traction cast" after two weeks with the Taylor brace which consists in traction by adhesive plaster to the limb reflected into the plaster of Paris, while counter-traction is obtained by two perineal straps and buckles incorporated into the body of the cast.

Though I stress that the great majority of femoral shaft fractures can be satisfactorily managed by the closed method with weight extension or traction, instead of fixation alone, I realize there is a definite field for open fixation. We must include in this field those few cases where the fragments cannot be approximated on account of the interposition of soft parts, or where there has been too much shortening from the lapse of time, or where the patient is absolutely uncooperative and unruly. Likewise, in old fractures with malunion or non-union, we need open operation. And I would add that in strong healthy men time often can be conserved by open reduction both in transverse and oblique types. Open fixation demands asepsis after the method of the Lane technique where not even the gloved finger is allowed to enter the wound. A Hawley fracture table should be used so that traction may be maintained during the operation. After a lateral incision is made to expose the fracture and the fragments gently brought into view in cases of recent fracture, we must refrain from elevating too much periosteum. We have a choice of several methods, remembering that the less foreign material we introduce into the serrated edges of the two fragments will allow accurate reposition. This may be combined by the introduction of chromic catgut through drilled holes. The Lane plate with four or six screws is the method of choice in the muscular individual. The Parham or Collins band placed around the shaft will lock bad oblique fragments. I condemn the wiring of fragments and the intramedullary pegs. The latter, while it may seem practical, is not sound because it eliminates the marrow cavity and destroys nourishment of the cortex. An inlay or onlay bone graft is preferable to the intramedullary peg, but in my opinion is not adaptable to the femur but has its place in the tibia, humerus, radius or ulna.

In old cases of malunion, it is necessary to separate the fragments (possibly to shorten them after getting rid of the excess callus) and then appose them properly. In non-union it is necessary to remove the sclerosed ends of the fragments until good bleeding is found before approximating the fragments. It is in these cases that grafting is to be seriously considered. In closure of the wound, suture without drainage.

Now let me add one point which occasionally we find neglected. It is essential to remember that internal fixation of fragments is only part of the treatment in open reduction. An adequate case or splint must be applied, as though no internal fixation has been used, and by these external fixations we refer to traction casts or traction braces, for otherwise we will be often embarrassed by the later buckling or slipping by of the fragments.

In conclusion: Closed reduction is more to be desired than the open for the following reasons: Less immediate infection; less late infection; less shock and lower mortality; less time and less cost to patient. In adults the best closed method is by traction with weight extension instead of fixation because in the latter alinement cannot be as well maintained, the fragments may buckle or slip by each other. Also with traction further correction or adjustment may be made from day to day as required. The traction may be either skin or skeletal, the latter utilizing the icetongs or Steinman pin or Kirschner wire. The skeletal traction is better because it allows more pull, and it does not slip. It need not be painful. With the traction we must have a proper splint or brace instead of the less effective Buck's extension. The necessary abduction of the lower fragment can be obtained with flexion of the knee by angulation in the splint. We can thus pull on the leg as well as on the thigh, thereafter either directly by skeletal traction or indirectly by pull on the splint. The patient may shift his position for comfort, for the bed pan, or for exercising the hip joint. Overhead suspension adds to these possibilities.

In children closed reduction is almost always indicated by Taylor brace and traction cast.

Open operation is indicated where closed reduction is not possible in muscular or unruly patients, or where interposition of tissue occurs or in old ununited or malunited fractures. The methods of choice are: Simple apposition; catgut fixation through drilled holes; Lane plate in transverse fractures; Parham band in oblique fractures; bone graft, but never the intramedullary peg; and complete the treatment by adequate external fixation with or without traction.

Soft tissue complications, such as hemorrhage, nerve injury or infection, often require treatment before bone fracture. Shock is the first factor to be considered. There is nothing gained in setting a fracture in the presence of shock.

Accurate apposition is not necessary if general alinement is obtained with slight shortening. Good weight bearing alinement is much more important than bony apposition, because joint strain is a real disability.

THE TREATMENT OF BRAIN TUMORS

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To mention the word cancer to a lay person is to cause dispair even though many cancers are slow growing and amenable to surgery. Likewise, to mention brain tumor to the medical profession at large is to begin sad shaking of the head, even though many brain tumors are slow growing and amenab'e to surgery.

The diagnosis, treatment and pathology of tumors of the brain are closely allied and should be discussed together. Prefacing Dr. Percival Bailey's book, Intracranial Tumors, is a statement by Foster Kennedy: "He who cares for patients suffering from brain tumor must bring to his problem much thought and stout action. There is need also of a formidable optimism, for the dice of the gods are loaded." The first sentence is true; the second is rapidly losing its significance.

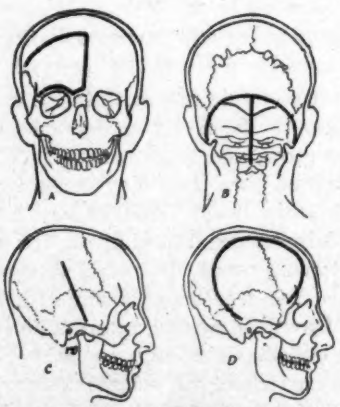
Brain tumors may be always regarded as emergencies; their treatment—conservative or radical—has much to offer. The results in this field compared to others with only their emergencies considered are not so unequal.

Brain tumors do not metastasize and in this sense few of them are malignant. However, they do grow, and the capacity for expansion is so limited that they may cause irreparable damage to the brain. They cause increased intracranial pressure; especially do the more rapidlly growing types. It is against these developments that treatment is directed: First, removal if possible; second, retardation of growth. These procedures failing, we strive for relief of pressure. Removal is by surgery. Relief of pressure is by surgery and by dehydration measures. Retardation is by radiation. There is no adequate medical treatment. Hypertonic

intravenous injections, salt or glucose, purgation, and other forms of dehydration can be used temporarily in cases that are suitable. and convulsions can sometimes be controlled with sedatives or magnesium sulphate.

In diagnosis it is necessary to consider three factors: The location of the lesion, its nature, and if a tumor, its pathological type. The treatment depends entirely upon these three factors. The cranial vault must be opened in the right place. If the localization is accurately determined as deep in the brain, mid-brain, or brainstem, surgery for removal should certainly be withheld, though surgery for relief of pressure may be considered. If the pathology is determined, we may avoid operating for tumors which are surgically not removable. The difficulty in diagnosing the pathological type makes it necessary that we undertake surgery in cases predestined to failure. In the majority, having made a diagnosis and localization of brain tumor, removal should be attempted; with careful, skilled technique and an understanding of the anatomy and histology of the brain, as well as of the neurosurgical problems involved, this can be done successfully in those cases where it is possible and can be abandoned with little harm to those where the lesion is beyond reach.

The differences between operating upon the brain and other parts of the body are: The risk of shock is much greater; respiratory paralysis is usually impending before operation; the silent and vital centers are not well defined and yet must be accurately considered; and the blood vessels and tissues will not support the weight of surgical instruments. As far as direct operative procedure is concerned, other than the care of parts of the brain essential to life and movement, hemorrhage is the greatest obstacle. The structure of the scalp, bone, and nervous tissue call for special methods of hemostasis and unless this is meticulously done, an operation lasting several hours can allow loss of blood to weigh the balance against the patient. Every patient must be typed and a donor be on hand for immediate transfusion if necessary. The neuro-surgeon's equipment includes special clips, hemostats. the electric knife, cautery, and other instruments. Bits of muscle tissue are used to stimulate coagulation, and the clearing of the field of blood is done with saline washing and soft cotton pledgettes to avoid damage to tissues.



Classical incisions for intracranial operations. A—approach to the hypophysis; B—approach to the cerebellum; C—incision for subtemporal decompression; D—approach to the cerebral hemispheres.

Fig. I.

The choice of anesthetic is not great. Where the patient can cooperate and is in good condition, local should be used. It is necessary only in skin as other parts are comparatively free of pain fibers. If local is not feasible, ether should be used, preferably administered by the intratracheal method. Drugs depressing the blood pressure or respiratory center should be used with the greatest of caution and for this reason preoperative medication is avoided, and although success has been reported with these drugs, they should be looked upon, along with avertin and the sedatives, as dangerous. Morphine also is extremely dangerous. The anesthetist should be an expert and should call out the blood pressure, pulse and respiration readings at definite intervals.

The position on the table is a question of preference. Removal and hemostasis are sometimes better accomplished though the danger of shock is greater as well as the means of combating it more difficult with the patient in the sitting position.

Various surgical approaches are illustrated in Fig. one. Subtemporal decompression is done through the straight vertical incision. Osteoplastic flaps are usually turned down with the temporal bone as a base and the bone left attached to the scalp and temporal muscle to insure blood supply. Drill holes are made and connected with Gigli saw cuts. The large lateral flap is used to approach the cerebral hemispheres and, by making it forward or backward, the frontal and occipital lobes can

be reached. After the turning of the flap. it may be necessary to reduce intracranial pressure by puncturing the ventricle or by intravenous hypertonic solution, for if the dura is opened in the presence of tremendous pressure, the cortex may rupture causing destruction of brain tissue and possibly hemorrhage. If the pathology is not in evidence upon the opening of the dura, needle punctures are made searching for areas of increased or lessened pressure or for poss.ble cysts, and the advisability of splitting the cortex to find a possible underlying tumor presents itself. It should certainly not be done in a motor or sensory area unless disturbance of function or sensation is already present. In a silent area it may be considered.

The tumor located and a piece excised, a frozen section is made and a pathological diagnosis obtained. If possible, the tumor is entirely removed; if not, partial removal is advised, and considerable bone should be rongeured from the base of the flap to give adequate decompression. The removal of all fibroblastic tumors — endotheliomas, meningiomas, and neurofibromas—should always be attempted. The blood supply and position may make it advisable to delay removal until a subsequent operation. If there is any doubt as to the patient's condition, the surgeon must never hesitate to terminate the operation, as the shock of the removal, with its frequent loss of blood, can be better avoided in a two stage operation. Also in the second stage many deep tumors are found nearer the surface. Astrocytomas and others of the glioma group should be treated radically, always of course considering the condition of the patient. With the spongioblastomas this is true with reservations. In the cases of spongioblastoma, especially those occuring in the brainstem, could a definite preoperative diagnosis be made, our inadequacy could be admitted and surgery avoided. However, as their incidence is only about one out of five of the known gliomas and as there are many other conditions, tuberculomas, gumma, thromboses, that may simulate brain tumors and thus reduce their case incidence, it is probably unsound to delay surgery because a spongioblastoma is believed present. This is especially true in cases of fibroblastic tumors to which the brain, having compensated for years of growth, suddenly reacts and gives a rapid history of symptoms closely resembling the rapid growth of one of the malignant glioma types. The fibroblastic tumors and most of the gliomas are resistant to radiation and they group themselves under tumors which, if to be benefited at all, will be benefited by surgery. Although this is true, it is usual to give all cases in which complete removal has not been accomplished one or more courses of radiation. Medulloblastomas, on the other hand, are sensitive to radiation and excellent results are obtained with decompression and radiation or partial removal and radiation. The wisdom of decompression here manifests itself as radiation often causes considerable reaction. In cases in which infiltrating gliomas are found and are definitely limited to the areas in front of the precentral gyrus an attempt may be made to remove that part of the frontal lobe including the tumor. The loss of considerable frontal lobe is often well tolerated, although some patients develop mental symptoms. This is also true in the occipital lobes and though he has defects of sensory reception, the patient is able to live usefully in spite of them. On the other hand, loss of tissue in the parietal lobe causes varying forms of paralysis and disturbance of sensation which are definitely incapacitating.

Tumors of the third ventrical can be reached through the frontal lobe and the anterior horn of the lateral ventricle or from above, between the hemispheres and through the corpus callosum.

Through the classical opening for exploring the pituitary body, meningogiomas of the olfactory groove and the sphenoid can be reached. It should be noted here that drill holes must be made a sufficient distance from the midline to avoid the longitudinal sinus. There are many variations of this approach in order to prevent scars on the forehead. Pituitary tumors are radiosensitive and can be radiated without preliminary decompression. However, the sella is often explored through this approach to remove tumors which are impairing sight—the supracellar cysts, and the pituitary adenomas.

In approaching the posterior fossa, the muscles of the neck are divided and the floor under the cerebellum removed. The dura here is intimately related to the lateral sinuses and cerebellar sinuses and there are often venous anomalies which make operating difficult. Great care must be exercised to avoid hemorrhage

which may delay the operation beyond the tolerance of the patient. Operations on the cerebellum and in the fossa are usually preceded by relief of pressure through a puncture of the posterior horn of the lateral ventricle. Through the cerebellar approach the acoustic neuromas are reached as are also medulloblastomas and astrocytomas frequently found in children.

Closure of brain operations must be thorough. When no recurrence is expected, the dura may be closed. Interrupted silk sutures are used close together in the galea, subcutaneous tissues, and skin. It is often wise, especially in the pituitary approach to suture the periosteum as an additional layer. The possibility of a fungus cerebri in a badly closed wound, as well as of a meningitis gaining access through a spinal fluid leak, makes this absolutely essential to a successful operation.

Blood pressure, and respiration must be maintained during operation and the patient must not be returned to bed until these are satisfactory. The head of the bed should be elevated and the patient closely watched for signs of increased pressure, high fever, and hemorrhage. High fever due to midbrain disturbance must be combated by ice packs and colonic flushings. It may be necessary to restrict fluids to prevent post-operative edema, and if it occurs, the intravenous injection of hypertonic solutions may be necessary. Tube and intravenous feedings are often necessary. As in other forms of surgery, the desperately ill patient may be saved by constant care and watching by a special nurse whereas he would die if left on general care.

In conclusion it may again be stated that the treatment of brain tumors is not hopeless and the general pessimistic attitude regarding them should be discouraged.

CONTROL OF FOOD ALLERGENS EXTREMELY DIFFICULT

ORVILLE HARRY BROWN, M. D.
Phoenix, Arizona

It has been my contention that foods, as causes of allergic reactions are far more difficult to control than are other allergens such as pollens, bacteria, animal emanations, dusts, etc., and that foods are probably more common offenders than are other allergens.

Allergens which may in a measure compare with foods, in difficulty of management and frequency of offense are bacteria. From birth to death we have bacteria; we may become sensitized to their proteins. Treatment, however, will usually control one's sensitiveness to them.

Another allergen which is extremely difficult to avoid is orris root; nearly every woman one meets has her face and body covered with powder; even men use it; it's in face powder. bath powder, tooth pastes, and many other cosmetics; one may keep his distance but orris root reaches him. One, however, may be given tolerance to orris root.

House dusts, likewise, are ubiquitous. One may change house dusts by changing houses. House dusts may be given in small doses gradually increased until tolerance is established.

Pollens may be given by hypodermic needle, or even by mouth as proven by Dr. Gatterdam, to raise tolerance to them and relieve hayfever and asthma; or one may move away from these irritating substances.

In the case of animal hairs or feathers the animals, birds, furs, pillows, mattresses, etc., may be done away with or one may move to a section where these agents are not sufficiently common to cause trouble or they may be dealt with in other ways; then, too, tolerance to the allergens may be developed by the small dose inoculations gradually increased.

The skin reactions to pollen, dusts, orris root, animal emanations, etc., are usually clear cut.

Foods one has constantly within him. A food which produces definite distress immediately after one has eaten it is easy to detect and one knows which food to blame for the trouble; but foods frequently produce delayed effects; then, too, one eats so many foods at a time as a rule that he may not know which one to blame when reactions result. Skin tests to foods often are not positive or at least not strikingly positive even though they cause trouble. Again one may go on a limited diet, for example buttermilk, and he may become free from his trouble (asthma, eczema. or other allergic reactions), and staying on the buttermilk, he may become sensitive to its proteins and develop an allergic state from them. Taking too much of any one article may lead to sensitization to it.

As I have indicated in a recently published paper, a food ordinarily may be perfectly harmless, but because it has lain on the grocer's shelf or in the sun in the producer's truck it may undergo sufficient chemical change to be particularly active in causing allergy. This explains why a food taken at one time may be harmless whereas at other times it produces violent reactions.

The cooking of food may destroy or lessen the effects of allergens. For this reason a person may eat a food which is thoroughly cooked without trouble but cannot take it another time without harm when raw or even moderately cooked. One may instruct his cook in adequately cooking his food and the cook, thinking the idea is all foolishness, may slight the job and trouble may come with the reason not apparent.

Then, too, a combination of certain foods may cause trouble while any one of the foods taken alone is harmless. The explanation is that no one food produces sufficient reaction by itself to produce trouble whereas two or more of them in combination are enough to give the disturbance. Certain foods are especial problems because they are used in a variety of ways and dishes. Onions for example are used in sauces, catsups, dressings, salads, etc. Wheat, too. is extremely difficult to avoid as it is found in bread, corn bread, rye bread, cakes, crackers. gravies, etc.; the same is true of milk, eggs and many other substances. When one is sensitized to any one or more of the common articles of diet the problem of avoiding it is indeed difficult.

Overtaxing one's digestive apparatus is often a cause of trouble. One may simply take too much food or he may take too much of a certain article of food. The amount one eats depends upon habit. I do not need to dwell upon the difficulty of teaching a person to control his appetite. Taking too much food and especially too much of one article of food predisposes toward development of sensitizations.

If the proteins before the amino acid stage of digestion get into the blood stream in sufficient quantities because of an overtaxed digestive apparatus and the chemicals of the tissue are not sufficient to deal with the undigested food, the whole. or split, proteins are certain to give one or another type of allergic reaction. It seems to me that this may account for the allergic individuals who give no hereditary basis for their allergies.

I have proven that good digestion is essential for recovery from allergic diseases. It is equally important in preventing allergy. Digestion may be inhibited by a variety of factors. It is temperamental. Cannon showed this decades ago.

Foci of infection, especially those about the nose and mouth, may readily set up gastritis and depress the stomach's secretion so that there may be little or no gastric digestion. Fatigue, excitement, nervousness,—arguments, quarrels, domestic discord—and many other factors depress digestion and check peristalsis, but do not check bacterial growth. Fermentative processes are thereby favored. One who is having asthma, eczema or pruritis from his food knows how a little nervousness during his meal will make him more allergic than usual.

If one develops a severe allergic reaction it takes days usually before he gets back to where he was before; in this interim, he is readily affected by foods and other allergens which would ordinarily not produce harm; since he is on edge as it were, the slightest allergen may tip him over into a severe reaction.

Since good digestion is extremely imperative in preventing allergic reactions, it is important that patients eat slowly and chew their food well. Eating slowly or rapidly is a matter of habit, and habits are notoriously difficult to change. The physician may instruct the patient to eat slowly, but if he has had the habit of eating rapidly it is a foregone conclusion that the physician's advise will have no influence—at least for a long time. It is necessary that a patient train himself to eat slowly if he hopes to recover and stay recovered from his allergic reactions that are due to food. If he is not sensitive to foods, obeying these rules will tend to keep him from becoming sensitive to them.

Thorough chewing of food is a matter of habit but it also may depend greatly upon the presence of teeth and the shape of the mouth. One may have his own teeth and the occlusion may be so poor that he is scarcely able to use them for mastication. The question of finances may enter in, to such an extent, that one cannot afford to have the necessary work done to obtain proper occlusion, or to have the correct bridges or plates made to give adequate mas-

ticating surface. Poorly fitting dentures are always a handicap and predispose to accentuation of allergic states.

It has been stated repeatedly by allergists that the substances contacted in the greatest amount and frequency are most likely to be the most serious allergens. Since one has food in him from shortly after birth to death, it would seem that food is certainly a most common allergen. On this course of reasoning the food one likes the most, other things being equal, are likely to be the source of his allergens. It is important, then, not to eat too much of any one food at any one meal nor too frequently and regularly, but to eat a variety—a little of this and a little of that.

The question of raising tolerance against foods by the administration of peptones, specific peptones or propetones is not proven and is probably next to impossible. Complete strict elimination of an offending food from one's diet for a sufficient length of time will desensitize to it or at least allow it to be again eaten, in small amounts and infrequently, without harm.

My belief is that it is scarcely possible to over emphasize the importance of careful selection, preparation, and mastication of food; eating is serious business and deserves far more thought than it ordinarily receives.

THE NEW PROGRAM OF THE SOUTHWESTERN MEDICAL ASSOCIATION

The first program under the new plan for the Southwestern Medical Association is now a matter of history. Although the attendance was not as large as was expected, those who were present pronounced the meeting well worth while.

All papers and clinics were given by men not members of the Association—as three days of post-graduate study. We heard many fine comments upon the speakers. There were some, however, who believed that the combination of the present plan with the former would be more desirable.

Our own opinion is that if certain subjects were assigned to members of our own association, with the request that they prepare up-to-date papers on the subjects, that our association would obtain just as much good as was obtained from some of the papers of the outside speakers. Very often the greatest good of a paper comes to the man who prepares it. On this course of reasoning it seems a shame to deprive our own members of the privilege of preparing some of the papers. It probably is wise to have a good sprinkling of foreign talent on the programs. At any rate this was a splendid meeting and the men who stayed away from it were the losers.

DOCTOR—SAVE A $20.00 BILL FOR A TRIP TO GUAYMAS

Arrangements are being made by the Santa Cruz County Medical Socieety for a trip to Guaymas (Old Mexico) following the meeting of the Arizona State Medical Association to be held in Nogales next April. Physicians and their ladies will be given an opportunity to participate in a most pleasant. enjoyable, inexpensive, and a never-to-be-forgotten trip to Guaymas, On the Gulf. The departure from Nogales will be made on Saturday afternoon, following adjournment, arriving at Guaymas early Sunday morning in ample time to enjoy a fine day's fishing. The return trip will be made leaving Guaymas Monday night, arriving Nogales early Tuesday morning. Those who wish to remain longer in Guaymas may do so.

The trip into real Old Mexico begins at Nogales, Sonora, and as your train rides south it takes you through villages, small towns, and cities where you get a real chance to view the colorful Mexican life.

Picturesque and graceful will seem to you the groups of peons, wrapped to the eyes in colorful blankets or zarapes, wide sombreros on their heads, shod with sandals, or huaraches as they call them, that gather at little villages to see the trains pass through. You will most assuredly be attracted by the lively commotion at the railroad stations. There you will see a busy crowd of native vendors selling fruits, sweet cakes, tortillas, coffee and flowers to passengers on the train. Ladened trays and bright pottery bowls are held up to the coach windows. Women, with heads swathed in shawls or tapalos, fan braziers from which coffee sends out an aromatic appeal. It is a scene of color and animation, novel and fascinating. You may regard it as a sign of hospitality, characteristic of the people of Mexico.

Whatever the scene chances to be, certainly

it will be interesting and in strange contrast to the country you have left, for you may cross oceans and see less fascinating 'foreign' lands than lay just a step over the United States border.

Mexico is a country of vivid contrasts—of weird deserts and fertile fields, of deep canyons and peaks that tower more than 17,000 feet, of tropics and eternal snows. The picturesque straw huts of its quaint villages contrast with the noble, graven stone buildings of the great cities. It is an old country with a strange and highly developed civilization that extends centuries back through Spanish colonial days into the vague ages of the Aztecs and Toltecs; yet it is in many respects a new land, as may be seen everywhere in the towns and development on the West Coast. And in that West Coast development, too, you may see odd contrasts—tractors and oxen plowing in adjacent fields, automobiles and burros both being used for transportation—the most primitive and most modern scientific methods intermingled. The trip is well worth while for just what you can see from the car windows, but the things of more compelling interest are in the cities and villages along the way. At Guaymas you will have an opportunity to spend some time in the church, wander through the big market with its scores of colorful bazaars; get an old carriage and jog through cobble-stone streets; idle an hour or two away over a cool drink in shaded out-door refreshment gardens.

Leaving Nogales our first principal stop will be made at Magdalena, where you view for the first time a typical Mexican plaza, and the ancient San Francisco Xavier Mission, built in 1690. Your next noteworthy stop is Hermosillo (Little Beauty), capital of the state of Sonora, a lovely city of 25,000 population, famous for its rose gardens, orange groves, beautiful cathedral and intriguing Spanish-Moorish architecture. The name "Little Beauty" not only applies to the place, but includes the women as well. The unusual number of beautiful women here is one of the outstanding characteristics of the city.

The city of Guaymas is located on Guaymas Bay and has a perfect. natural land-locked harbor. It is one of the principal seaports of Western Mexico, with a population of about 6,000. The real beauty of Guaymas Bay cannot be seen from the city proper; but a short boat ride will convince you that it is a very picturesque and scenic place. Motor launches which will accommodate several persons can be rented for three or four pesos per hour. The boatmen are expert fishermen as a rule, and usually carry troll lines for the use of their customers. A trip to the outer entrance of the harbor requires about two hours to go and come. Fish abound in the Gulf, and sportsmen who have fished in all parts of the world have been known to say that probably no body of water anywhere excels the Gulf of Lower California for the size, variety, gameness and quantity of its sea life. And talk about oysters, shrimp, crabs, lobsters—well, there is no end to what you will enjoy in the way of sea food.

A short distance from Guaymas, about two miles west is Miramar, a resort beach, one of the most interesting spots in Mexico, where nature never was more prodigal, and at this spot the Southern Pacific Railroad Company has erected a palatial tourist hotel "Playa de Cortez," with most elegant and comfortable accommodations for the tourist's perfect enjoyment of the wonders of this spot, with its climate of Paradise. dreamful skies and one of the most picturesque bathing beaches in the world.

You will not be troubled about pass-ports. This will all be taken care of by the committee-in-charge. The Mexican officials will extend every possible courtesy to those making the trip. The railroad company is making a special reduction in rates and a $20.00 bill should be sufficient to cover the full cost of the trip for each person. So, come along and enjoy the finest, shortest trip ever in your experience; bring the wife and kiddies—they, too. will have a big time. The city officials of Guaymas are co-operating to make your trip enjoyable from every angle—and the same thing may be said of the officials of the state of Sonora. A little later we'll give you more specific details, but keep this trip in mind, and plan now on going, as well as being with us in Nogales at the 1936 annual meeting of the Arizona State Medical Association.

Dr. Anson B. Ingles, former Director of Gila County Health Unit is now practicing in Globe, Arizona. Dr. Ingles has traveled extensively in India and while there he made a study of Hindu magicians and fakirs. It is said that he frequently startles his patients by pulling rabbits out of a hat or doing some other mystifying performance.

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OUR NATIONAL ORGANIZATION

We have just returned from a meeting at Headquarters. Every year the American Medical Association calls a meeting of the secretaries of the State Medical Associations and the editors of the State Medical Journals. This year the meeting was at the Palmer House in Chicago because of certain changes being made at 535 North Dearborn Street.

Rock Sleyster, Chairman of the Board of Trustees of the American Medical Association, presided at all sessions. There were addresses by James S. McLester, President of the American Medical Association, W. D. Cutter, Secretary of the Council on Medical Education and Hospitals of the American Medical Association, Paul Nicholas Leech, Secretary of the Council on Pharmacy and Chemistry, D. F. Harbridge, Secretary of the Arizona Medical Association, J. G. Crownhart, Secretary of the State Medical Association, W. F. Braasch of the Minnesota State Medical Association, Morris Fishbein, Editor of the American Medical Association, and Ralph F. Pino of the Michigan State Medical Association.

Along with the bouquets given to our National organization there were thorns and brick bats. The speakers spoke or seemed to speak with a great deal of feeling. There was a general conception among the members present that our National organization is truly a great organization. We should regard it not as "The" American Medical Association but as "Our" American Medical Association.

The Texas Association is the Texas branch of the American Medical Association and likewise the New Mexico and Arizona Associations are branches of the American Medical Association.

We may not approve entirely of each and every policy of our National Association. In meetings it is perfectly proper that we should speak our minds—tell one another what we think; but out of meetings we should be squarely back of our officers and policies of our National organization. We may not like the Editor or the way he combs his hair or the way he speaks, or we may not like the Secretary or we may not like the Secretary of the Council on Pharmacy and Chemistry; we may think he is too small a man for the job or something else is wrong; but so long as these men are our paid officers and servants it is our duty and privilege to be guided by them and to give them our heartiest support.

There was no request or intimation that such an editorial as this would be expected or even appreciated by the officers of the American Medical Association. But, Physicians of the Southwest, the American Medical Association is our National organization—ours to do with as we think best. It is well for us to remember, however, that we should build it up and make it stronger; in no part should it be torn down unless there is a well conceived program of building the structure stronger.

THE DISTRICT OF COLUMBIA MEDICAL SOCIETY HAS DEFINITE PLANS ON MEDICAL ECONOMICS.

We published in the November issue an excellent resume of the plans of this progressive medical association. If the reader has not read that article, we suggest that he turn at once to the November issue of Southwestern Medicine and read it. We repeat that we believe that every county medical society should be studying this problem in all seriousness.

NATIONAL RADIO HEALTH TALKS

The American Medical Association is dramatizing programs over the network of the National Broadcasting Company every Tuesday at 5:00 P.M. E.S.T., 4:00 P.M. C.S.T., 3:00 P.M. M.S.T., and 2:00 P.M. P.S.T. On the 3rd of December Morris Fishbein, Editor of The American Medical Journal, will talk on Tuberculosis, and on the 10th on Hunting Accidents. Dr. W. W. Bauer, Director of Bureau of Health and Public Instruction of the American Medical Association, will talk on Animal Disease in Man on the 17th, on the 24th, Eat, Drink, and Be Merry, and on the 31st, Pneumonia. We suggest that the physicians of the Southwest see that proper publicity is given to these programs.

A NEW POLICY OF THE AMERICAN MEDICAL ASSOCIATION.

The Council on Medical Education has decided to no longer carry an approved list of sectarian schools, and will no longer publish a list of two-year medical schools, and they also state that a medical school must not allow its number of students to exceed the number that can be adequately taught with its laboratory, library and clinical facilities.

THE DALLAS SOUTHERN CLINICAL SOCIETY

Plans are already under way for the spring conference. There will be a general assembly with distinguished speakers from various parts of the country, clinics, round-table discussions, and elaborate dinner, and motion pictures all for the registration fee of ten dollars. The dates are March 16-19. Physicians of the Southwest should remember this date and endeavor to attend the meeting.

UNITED STATES CIVIL SERVICE EXAMINATIONS FOR PUBLIC HEALTH CONSULTANTS.

The United States Civil Service Commission is calling for applications for examinations as Public Health Consultants and for Social Economists. Evidently this is because of the Social Security legislation by the last Congress. We hope to be able to present a digest of the Social legislation to our readers in the near future.

THE 1936 ARIZONA MEETING

At the 1936 meeting of the Arizona State Medical Association to be held in Nogales April 23-24-25, for the first time in the history of the Association there will be a meeting of the Eye, Ear, Nose and Throat physicians of the state. Several prominent guest speakers will participate.

At the same time there will be a group meeting of the Mexican physicians, who are now busy preparing their program. Dr. Najera, Ambassador from Mexico to the United States, a most prominent physician of Mexico City, is expected to be present and address the group. The Santa Cruz County Medical Society is already assured of splendid scientific exhibits for the 1936 meeting of the state association, among them being:

1. Drs. Soiland, Costolow and Meland, Los Angeles.
2. Dr. John O. McReynolds, Dallas.
3. Dr. Loring T. Swain, Boston.
4. The American Medical Association, Chicago.
5. Dr. William B. Watts, Jr., Miami.
6. Arizona State Board of Health, Phoenix.
7. Green's Eye Hospital, San Francisco.
8. Dr. Hans Barkan, San Francisco.
9. Pathological Laboratory, Phoenix.
10. Dr. R. O. Schofield, Boulder City, Nev.
11. The Wyatt Clinic, Tucson.
12. Dr. Glenway W. Nethercut, Chicago.
13. The Desert Sanatorium, Tucson.
14. U. S. Public Health Service, Washington.

There will also be several commercial exhibits. Full details concerning the scientific and commercial exhibits will be given later. However, at this time it is hoped the profession of Arizona will appreciate the efforts of the host-society in securing these exhibits.

NOTICE—PLEASE: If any one has any suggestions to offer which will in any way aid the Santa Cruz County Medical Society in making the 1936 meeting the BIGGEST and BEST ever held in the history of the Association, then please communicate with the boys in Santa Cruz. This is YOUR convention and any suggestions you have to offer will be gratefully received.

SANTA CRUZ MEDICAL SOCIETY.

OBITUARY

Dr. Fenn J. Hart died November 9, 1935, at his residence at 1118 North Second Street, Phoenix, Arizona. Dr. Hart had been ill for about six months. His condition became serious in recent weeks.

He arrived in Arizona March 7, 1884, and became physician of the San Xavier Mission, in which position he remained for three years. He then moved to Tempe, Arizona, where he engaged in private practice. In addition to being active in his professional work he found time for civic work. He served as the first mayor of Tempe and held the position for a number of years. He was a member of the board of the old Territorial Normal School located at Tempe. He served in the Spanish-American war in the Phillipines for ten months as a Red Cross physician with the San Francisco unit.

He returned to the United States after the war and practiced for several years as a mining company physician in various places—in Jerome, Bisbee, Ray, Christmas and Mexico. In 1919 he moved to Phoenix and for a number of years had his office at Second and Washington Streets.

Dr. Hart enjoyed an extensive practice in Phoenix and was kept so busy that he was rarely seen at the medical meetings.

In 1888 he married Rosa Ann Brown in Phoe-

nix; he had one daughter who is now Mrs. R. N. Wilson of Berkeley, California, whom he visited this past summer. Surviving Dr. Hart are his wife, daughter and a niece, Mrs. H. B. Griffin of Mesa.

NEWS NOTES

Charles N. Sarlin, M. D., recently located at Tucson, Arizona, 127 South Stone Avenue. His practce is limited to psychiatry.

Dr. Marcus H. Watters recently arrived at Fort Whipple to assume a position on the medical staff. He comes from the Veterans Administration of Helena, Montana.

The Public Health officials and engineers from the counties and cities of Arizona had a three-day meeting in Phoenix during November. The meetings were held in the Capitol Annex. The subjects which received a great deal of discussion were, Sanitation of Swimming Pools, Garbage, Disposal, Meat Inspection and Restaurant Sanitation. Prominent among the physician speakers were Dr. George Hays, State Epidemio.ogist of Arizona, and Dr. R. W. Hussong, City Health Officer of Phoenix.

Drs. George Arnold Stevens and Robert S. Hardwick recently of the Mayo Clinic have located in El Paso and have offices in the Bassett Tower. Dr. Stevens will limit his practice to diagnosis and surgery and Dr. Hardwick to genito-urinary diseases.

Dr. James Sherman has left El Paso and is practicing in Kentucky.

Dr. J. Mott Rawlings is convalescing from a staphylococcic septicemia which he developed in July. He had nine transfusions. He is now up and about and expects to resume practice about December 1st.

Dr. F. P. Miller was named governor by the American College of Surgeons for the state of Texas at the recent San Francisco meeting.

Dr. E. F. Garlington of Phoenix, who has been in St. Joseph's Hospital for four months with a broken leg received in an automobile accident, returned recently to his home.

Dr. C. A. Donaldson of Tucson, Arizona, is a member of the County Health Clinic of Pima county.

Dr. L. J. Reagan of Tucson, Arizona, is an assistant in the County Health Clinic of Pima county.

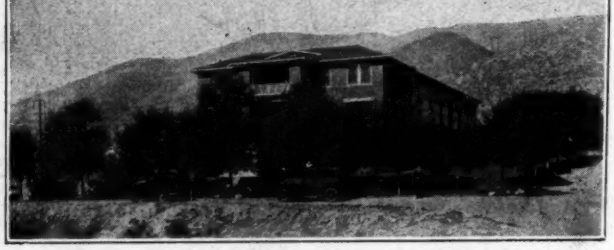
According to a newspaper dispatch, Dr. Harley Yandell's mother who lived at Mount Vernon, Ill., passed away on the first of December of this year.

Dr. Benjamin Herzberg of Phoenix and Miss Dorothy Kline of Los Angeles were married at Dr. Herzberg's home by Rabbi Philip Jaffa. Dr. and Mrs. Herzberg had a wedding trip to the Grand Canyon. At present they are living at Hotel Westward Ho.

The wedding took place as a surprise to the members of the families of both the bride and groom who had been invited to a Thanksgiving dinner at the home of the bridegroom. The young couple announced their plans after the members of the families had assembled.

Dr. E. Payne Palmer of Phoenix, while in San Francisco, broke into public print by advising those who wished to enjoy longevity, happiness, and health to obey the following don'ts:

"Indulge in alcohol;
Become excessively emotional;
Submit to anger. avarice, ambition, vanity, gluttony, or uncleanliness;
Attempt to avert parenthood."



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CRUM EPLER, M. D.
Superintendent

WOODCROFT HOSPITAL, PUEBLO, COLORADO

"Vanity," the doctor explained, "usually affects health in connection with attempts to acquire a graceful figure by injurious means."

Dr. and Mrs. I. E. Huffman of Tucson spent a few days in Phoenix in the early part of December.

Dr. Orville Harry Brown of Phoenix was asked to address the Grandview Woman's Club upon the subject of "The Cure of Cancer" early in December.

Dr. D. F. Harbridge of Phoenix attended the Secretaries' and Editors' Meeting held in Chicago during November; Mrs. Harbridge accompanied him. The Doctor took advantage of his proximity to spend two or three days with his family at Racine. While there he attended the Eye, Ear, Nose and Throat Section of the Milwaukee Society, and was honored by being asked to address them. Dr. Harbridge gave a very interesting paper before the meeting of the Secretaries and Editors, which is mentioned editorially in this issue.

Dr. and Mrs. Orville Harry Brown of Phoenix spent two weeks in the Middle West during the latter part of November and the Doctor attended the Secretaries and Editors' Meeting in Chicago. He also took occasion to visit his mother at Kansas City during this time.

Drs. W. R. Lovelace, L. M. Miles, W. H. Thearle, C. C. Keeler, J. W. Hannett and P. G. Cornish of Albuquerque, E. W. Fiske of Santa Fe and F. H. Crail of Las Vegas attended the recent American College of Surgeons meeting in San Francisco.

Dr. M. K. Wylder of Albuquerque attended the Southern Medical Society meeting in St. Louis; he also attended a class reunion at Washington University Medical College.

BOOK REVIEW

DISEASES OF THE THYROID GLAND, by Arthur E. Hertzler, M.D.; With a chapter on Hospital Management of Goiter Patients by Victor E. Chesky, M.D.; third edition, entirely rewritten; C. V. Mosby Company; St. Louis, 1935; $7.50.

Dr. Hertzler has produced his third edition of Diseases of the Thyroid Gland; it is an enlargement and an improvement over the former volumes.

Practicing in a country community he has the opportunity to follow his patients in a more or less intimate way for years.

Those who have been familiar with the former editions of this book know its value and need only to be told that this is an improvement which is a result of more learning.

The book is well illustrated with drawings by Tom Jones. The publishers have done their work in a most excellent manner. The book is especially recommended to all physicians interested in goiter work.

It is interesting to note: that a fair average of the length of time an infant receives dextri-maltose is five months: that these five months are the most critical of the baby's life: that the difference in cost to the mother between dextri-maltose and the very cheapest carbohydrate, at most is only $6 for this entire period—a few cents a day: that, in the end, it costs the mother less to employ regular medical attendance for her baby than to attempt to do her own feeding, which in numerous cases leads to a seriously sick baby, eventually requiring the most costly medical attendance.

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SYPHILLIS AND GONORRHEA IN NEW MEXICO

Five tables are here presented which should have accompanied the excellent araicle on "Causes of Cases of Syphilis and Gonorrhea Under Medical Care in New Mexico, by Drs. M. J. Exner and Walter Clark, published in the July issue (1935) p. 241.

Source of Reports and Cases Under Treatment in New Mexico, December 1, 1933.

SOURCE	Total number of reports	No. reporting no cases	1 or more cases	Per cent reporting 1 or more cases	Total No. of cases reported	Percentage of cases reported by each source
Total	350	154	196	100.0	1831	100.0
Physicians	278	107	171	87.2	1594	87.1
Hospitals	45	32	13	6.6	85	4.6
Clinics*	15	10	5	2.6	66	3.6
Institutions	12	5	7	3.6	86	4.7

*Includes out-patient departments of hospitals.

Table 1

Total Cases of Syphilis and Gonorrhea Under Treatment and the Case Rates Per 1,000 Population.

Diagnosis	TOTAL Both sexes	TOTAL Males	TOTAL Females	WHITE Both sexes	WHITE Males	WHITE Females	INDIAN Both sexes	INDIAN Males	INDIAN Females	NEGRO Both sexes	NEGRO Males	NEGRO Females
Total Cases under treatment												
Syphilis and gonorrhea	1831	1291	540	1672	1203	469	106	56	50	53	32	21
Syphilis	1011	706	305	928	666	262	55	23	32	28	17	11
Gonorrhea	820	585	235	744	337	207	51	33	18	25	15	10
Case rates per 1,000 population												
Syphilis and gonorrhea	4.3	5.9	2.6	4.3	5.9	2.5	3.7	3.7	3.6	18.6	20.9	15.9
Syphilis	2.4	3.2	1.5	2.4	3.3	1.4	1.9	1.5	2.3	9.8	11.1	8.3
Gonorrhea	1.9	2.7	1.1	1.9	2.6	1.1	1.8	2.2	1.3	8.8	9.8	7.6

Table 2

Case Rate Per 1,000 Population by Stage or Disease.

Race and sex	Syphilis Total	Syphilis Early	Syphilis Late	Gonorrhea Total	Gonorrhea Acute	Gonorrhea Chronic
Total						
Both sexes	2.4	1.3	1.1	1.9	1.2	0.7
Males	3.2	1.8	1.4	2.7	1.8	.9
Females	1.5	.7	.8	1.1	.7	.4
White						
Both sexes	2.4	1.3	1.1	1.9	1.2	0.7
Males	3.3	1.9	1.4	2.6	1.7	.9
Females	1.4	.7	.7	1.1	.6	.5
Indian						
Both sexes	1.9	.6	1.3	1.8	1.6	.2
Males	1.5	.6	.9	2.2	1.9	.3
Females	2.3	.5	1.8	1.3	1.3	---
Negro						
Both sexes	9.8	5.5	5.3	8.8	4.9	3.9
Males	11.1	4.6	6.5	9.8	6.3	3.3
Females	8.3	4.5	3.8	7.6	3.0	4.6

Table 3.

Annual Incidence Rates Per 1,000 Population, by Stage of Disease, Race and Sex, as Indicated by the Number of New Cases Accepted for Treatment for the First Time During November, 1933.

Race and sex	Syphilis Total	Syphilis Early	Syphilis Late	Gonorrhea Total	Gonorrhea Acute	Gonorrhea Chronic
Total						
Both sexes	7.9	5.2	2.7	9.8	7.3	2.5
Males	10.2	6.8	3.4	14.0	11.0	3.0
Females	5.4	3.5	1.9	5.3	3.3	2.0
White						
Both sexes	7.9	5.2	2.7	9.2	6.8	2.4
Males	10.5	6.9	3.6	13.0	10.3	2.7
Females	5.1	3.4	1.7	5.1	3.1	2.0
Indian						
Both sexes	2.9	2.5	.4	14.1	12.4	1.7
Males	3.2	3.2		22.6	20.2	2.4
Females	2.6	1.7	.9	5.1	4.2	.9
Negro						
Both sexes	63.2	33.7	29.5	46.3	16.8	29.5
Males	47.0	31.3	15.7	54.9	15.7	39.2
Females	81.9	36.4	45.5	36.4	18.2	18.2

Table 4.

Percentage of Cases Under Treatment or Observation in Private Practice and in Public Clinics.

Diagnosis	Males Tot	Males W	Males Ind	Males Neg	Females Tot	Females W	Females Ind	Females Neg
	Private Practice							
Total Syphilis	83.3	85.1	39.1	70.6	80.7	85.9	37.5	81.8
Early	96.0	97.4	33.3	100.0	93.0	93.1	85.7	100.0
Late	66.2	68.0	42.9	50.0	69.8	78.8	24.0	60.9
Total Gonorrhea	92.6	96.3	30.3	100.0	92.8	93.7	83.3	90.0
Acute	91.9	96.4	32.1	100.0	92.9	94.1	83.3	100.0
Chronic	94.1	96.1	20.0	100.0	92.6	93.2		83.3
	Public Clinics							
Total Syphilis	16.7	14.9	60.9	29.4	19.3	14.1	62.5	18.2
Early	4.0	2.6	66.7		7.0	6.9	14.3	
Late	33.8	32.0	57.1	50.0	30.2	21.2	76.0	40.0
Total Gonorrhea	7.4	3.7	69.7		7.2	6.3	16.7	10.0
Acute	8.1	3.6	67.9		7.1	5.9	16.7	
Chronic	5.9	3.9	80.0		7.4	6.8		16.7